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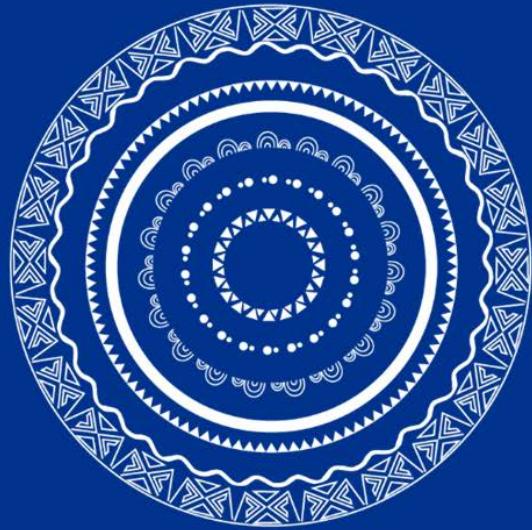
RFT 1958 Predictive Analytics Platform for Ambulance Victoria

Delivering world leading real-time insights you can trust



As a firm, KPMG acknowledges Aboriginal and Torres Strait Islander peoples as the First Peoples of Australia. We pay our respects to Elders past, present and future.

Our aim is to build a future where all Australians – Indigenous and non-Indigenous – are united by our shared past, present, future and humanity.



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1. Cover letter

Samantha Treeve
Project Manager,
Ambulance Victoria

30 January 2019

Dear Samantha,

Thank you for giving us an opportunity to assist Ambulance Victoria (AV) with the implementation of a predictive analytics platform.

As your data and Analytics (D&A) partner since early 2017, we have explored every corner of your data, systems, and processes. Working closely together, you've come to know us, our capabilities, and the art of the possible – a relationship that we trust will ideally position us to be your implementation partner for this project.

From our past experience, we understand that technology change programs of this nature - encompassing platform change and the introduction of new D&A capability - can be a daunting prospect for any organisation. When considering the critical nature of the business areas impacted, the need to be always ready to scale with agility and minimally disrupting the business, we do not envisage this to be a walk in the park.

As a high-performing D&A team in Australia, we thrive under pressure of this nature. We understand how to deliver complex D&A programs and are always ready to deal with ambiguity and uncertainty as this is a natural outcome of agile delivery in the D&A space.

Critical to the success of this delivery are 3 key hallmarks of our proposal:

1. We bring tangible acceleration to your program through our understanding of your data landscape and our embedded architecture and single-pane-of-glass (SPOG) visualisation IP based on some of our world class global solutions. To demonstrate our commitment to you, we have developed the initial SPOG solution to showcase how we can apply this to an AV context with user stories you can deploy sooner.
2. We have an approach that will always balance the dual need for you to have control of your program at all times coupled with our ability to flex our teams to deliver in an environment of changing priorities. Our demand-driven, agile approach will always ensure you get (and pay) for only what you need from us.
3. We have spent a lot of time evaluating the ideal combination of world class technologies to suit your

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requirements. We have respected your need to ensure that all of the proposed technology is either native Azure or fully Azure compatible to ensure there is ease of configurability, maintainability and independence. Leveraging our Global Alliance with Microsoft, we would be hard pressed to find a better set of cloud-enabled data management and analytics capabilities to future proof your predictive analytics platform.

We also understand and appreciate your requirement to ensure there is a single entity - the Primary Platform Supplier - tasked with the delivery baseline capabilities such as the core platform, MDM and the SPOG user stories. We also appreciate the benefit you seek in complementing this delivery capability with a Panel Supplier for future discretionary work. We are very pleased to offer our services to assist in both of these Supplier arrangements

The credentials and references in this proposal provide a glimpse of our deep and wide ranging experience in the delivery of cloud-based Azure data management and analytics platforms through the delivery of similar solutions for a wide range of clients across Healthcare, Government and other related sectors.

We take great pleasure in setting out our approach, methodology, deliverables, timeline, team structure and the reasons why we believe KPMG is best qualified to serve you on this important initiative.

Please feel free to contact me if there is any clarification you require with regard to our attached proposal.

Be sure to check out our **interactive** proposal microsite:

Visit: <https://ambulance.gateway.kpmg.com.au>
Password: #ambos4life




Prashant Khanna

Partner, Analytics & Information Management

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2. Our Understanding of Your Needs and Objectives

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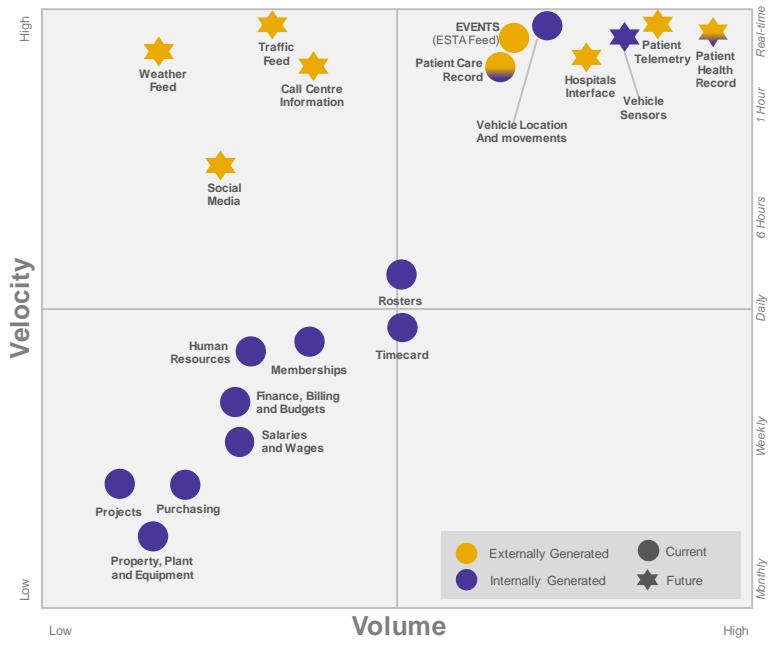
2. Our Understanding of Your Needs and Objectives

2.1. The Strategic Importance of Data and Analytics for AV

2.1.1. The need for real-time, predictive analytics at AV

Ambulance Victoria is a emergency services organisation that prides itself on providing the right level of care to its patients at the right time and at the right place. A key enabler to this outcome is the ability for paramedics and their support crew to provide real-time data and insights to support operational and clinical decision making.

AV's data landscape, based on our experience from previous engagements, is a combination of internally generated and third party sourced data with varying velocity, variety, volume and veracity. In addition, it is anticipated that the majority of future data sources will be high velocity and externally provided. This unique combination of current and future data sources presents a challenge and an opportunity for AV to leverage a vast array of data to achieve it's objective of real-time data and insights.



Overview of AV's current and potential future data sources by velocity and volume

2.1.2. Challenges with the Data & Analytics Technology Platform at AV

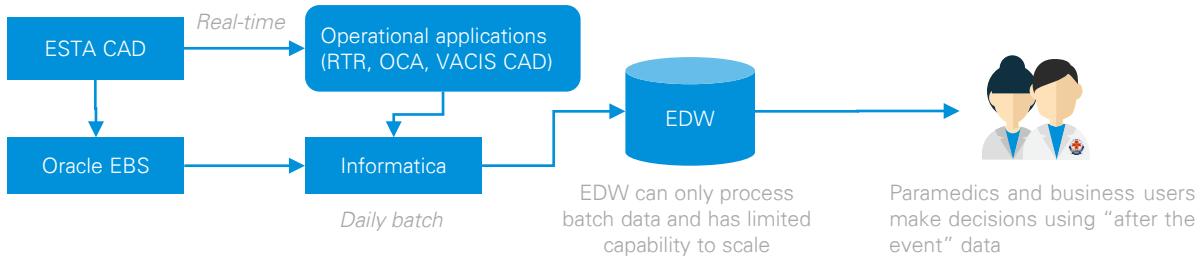
The primary challenge however with the volume and variety of data stated above, is the inability for the current infrastructure and applications to ingest, store, process and visualise this data in a timely manner.

For simplicity throughout this proposal we refer to real-time data, analytics and decisioning. However we acknowledge that achieving real-time outcomes in real-world applications, typically requires the analysis and decision making to be applied at the point of data capture (known as edge computing).

Given the scope of this engagement is to develop a predictive analytics platform using cloud based architecture, we would expect results closer to "near real-time" allowing for a reasonable interval subject to communications bandwidth and processing latency.

Example of technology challenges impacting AV's ability to provide real-time insights

The following high level data flow highlights the limitations in the current Data & Analytics technology landscape in ingesting, store and analysing data to support real-time analytical requirements impacting the ability to generate real-time insights



2. Our Understanding of Your Needs and Objectives

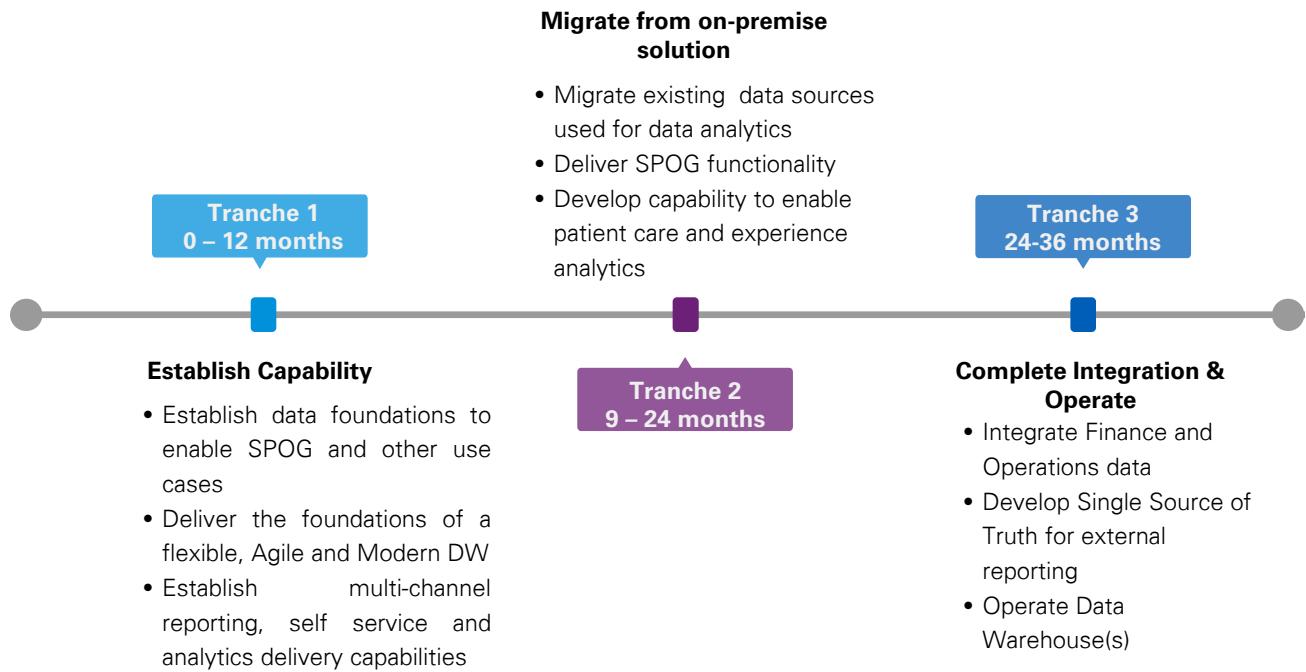
2.1. The Strategic Importance of Data and Analytics for AV

2.1.3. AV's vision for a real-time analytics solution

We understand that AV seeks to build a high availability, scalable and resilient next-generation data and analytics platform that can integrate with the range of current and anticipated data sources in order to enable paramedics and their support crew to make real-time and predictive decisions to improve operational performance and clinical outcomes.

Whilst over the short to medium term the platform will enable the delivery of business critical analytical requirements it is envisioned that once these requirements are met, the platform will evolve into becoming the single source of truth for both slow-moving and fast-moving data across finance, operations and other data domains across AV.

Predictive Analytics Platform Delivery Program



2.1.4. Single Pane of Glass (SPOG) and user stories

We understand that the 33 user stories as part of the SPOG is intended to provide a range of AV stakeholders including Operations Managers, Duty Manager and Paramedics with a unified console or a dashboard that integrates information from varied sources across multiple applications and environments into a single display. This will enable the improvement of response performance by understanding various pressure points on the network and supporting proactive decision making.

Based on the 10 Other User Stories which primarily focus on historic-focused planning and analysis covering roster optimisation, voice, video and telemetry analytics and finance related analytics our understanding is that the predictive analytics platform can potentially expand into other business areas of AV including non-emergency services, finance, HR and clinical research.

2. Our Understanding of Your Needs and Objectives

2.1. The Strategic Importance of Data and Analytics for AV

2.1.5. Scope of work to deliver the Predictive Analytics Platform

We have summarised our understanding of the scope of work and summary of services for the Primary Platform Supplier and Panel Supplier below.

Primary Platform Supplier

As the Primary Platform Supplier, we understand the scope of work to consist of three key delivery components.



Implement, support and maintain the predictive analytics platform which covers design, build, test, implement and deploy activities related to the components required to deliver a secure, robust, scalable and highly-available Predictive Analytics Platform which meets AV's business and analytics requirements



Delivery of the Master Data Management activities which involves the analysis of key business entities used across the AV and the impact of changes in these entities across different systems. There is also a requirement to perform a fit-for-purpose assessment of the existing AVRDS application and implement the recommendations provided through this analysis and assessment.



Analytics functionality to enable the "Single Pane of Glass" capability which includes the requirements gathering and validation, build, test, implement and deploy activities to enable the 33 Use Cases specified as part of the Single Pane of Glass use case.

Panel Supplier

As a Panel Supplier, we understand the scope of work to consist of:



Delivery of integration related activities which primarily relates to the building of data ingestion pipelines (e.g. Azure Data Factory pipelines) to source data from Ambulance Victoria applications



Delivery of data modelling and transformation related activities which may include sourcing, cleansing, transforming and modelling data sources into dimensional models based on requirements provided by AV.



Delivery of predictive analytics use cases including the 10 Other User Stories as provided in the RFT documentation.

3. Our Proposed Solution

Be sure to check out our **interactive** proposal microsite:

Visit: <https://ambulance.gateway.kpmg.com.au>

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3. Our Proposed Solution

3.1. Overview of Our Solution

Critical to your success is becoming an organisation that delivers outstanding emergency healthcare every time is meeting one of your operational factors; achieving an 85% response rate. A key enabling tool will be implementing a real-time predictive analytics platform; giving AV access to near real time data to make informed decisions today for tomorrow.

KPMG brings together robust strategic alliances & partnerships to ensure you get the best in cloud computing & data management. Aligned to your requirement for a cloud-first platform, KPMG's Predictive Analytics Platform for AV will utilise as much of the Microsoft Azure technology stack as possible.

On day one, you'll get KPMG's Azure-based, fully compliant, agile, and scalable real-time predictive analytics single pane of glass accelerator (free of charge), so we can move ahead quickly and confidently. The platform will be will be hosted in a Microsoft Azure environment located in Australia with modern PaaS / SaaS components to meet AV's core mission-critical capabilities. In addition, Data Management capability will be realised using world class technology from Informatica that is fully Microsoft Azure compatible.

Using our experience at AV over the past two years, we've quietly refined and configured KPMG's solution to the point where it now meets at least 30% of your initial requirements. The videos featured on our Proposal Microsite demonstrate how the platform can be used to deliver all 42 use cases).

Data integration layer will support data ingestion batch structured, semi-structured, unstructured including video & voice, real-time streaming, and external API connectivity. Data integration layer be built following industry's best practices and proven patterns. The platform will provide data integration and orchestration to source and land data from various sources including, but not limited to, batch structured & unstructured, real-time streaming datasets, external batch & streaming data sources via the use of various sources.

- The Integration layer will provide AV with linkages and connectivity to various (internal/external) data sources and build the foundation to develop capability for data collection and real-time data sharing.
- Its modular design will also build sustainability by ensuring flexibility and scalability in its design

Transformation layer will address cleaning and standardising Structured/Semi-Structured/Unstructured data into the right format, transform unstructured data, and consolidate and aggregate data.

- The Transformation layer will ensure that the critical data is wrangled into appropriate format for focussing on attributes like Patients, Events and Paramedics so that access to patient information to achieve better patient experience and outcomes

Storage layer will support storage of relational transformed/consolidated/semantic data in an analytical store which is a solid foundation for Analytics, ML & AI. Storage layer will also store non-relational/unstructured & streaming data. Storage of transformed relational data will be loaded and stored in a dimensional model in a relational database. Storage of transformed non-relational data will be loaded into NoSQL database.

- The Storage layer will ensure that the right data is stored for the right reason breaking down information and organisational silos to centrally store and exchange data and enable development of insights

Data Analytics and Data Science Layer will analyse Big Data, mash & blend data for data science experimentation, perform various modelling techniques like regression and statistics, apply artificial intelligence and Advanced Analytics. Analytics layer will support Advanced Analytics that can also be used for Data Science experiments that . simplifies and accelerates the building, training and deployment of machine learning models.

- The Analytics layer will support accelerated decision making, and reduce duplication of activities by embedding analytics

Visualisation Layer will support serving data for consumption and interactive visualisation, self-service and ad-hoc reporting. For downstream Transformed Enriched Data Analysis, we can build a semantic/abstraction model that can also increase system performance when analysing data. The underlying semantic model can be built using products or approaches and the right option will be chosen in collaboration with AV.

- The Visualisation layer will support Single Pane Of Glass that aid in performing day-to-day functions and to answer questions related to the operation of the ambulance network

As demonstrated in Section 7 Our Credentials; being a primary implementation partner and helping organisation like yourselves achieve the power of similar solutions, is business as usual for us. We've done it before for many emergency health organisation such as yourself, Rural Fire Service NSW, St John of God Private Hospital Group and government organisations such as the DHHS.

3. Our Proposed Solution

3.1. Overview of Our Solution

Microsoft Azure, as a cloud services offering designed to help organisations meet business challenges at low cost and large scale, offers the best of traditional Microsoft products like Azure SQL Databases and more advanced bleeding edge serverless computing services. For the bulk of the proposed **Data Ingestion, Storage, Transformation, Analytics and Visualisation** layers of the solution, Microsoft Azure services will form the core components of our offering.

The data and insights services offered by Microsoft via Azure are generally of a high degree of maturity and robustness to meet AV's requirement however there are a few areas in the proposed architecture and technology stack where we believe that an alternate approach and solution would be more beneficial to AV.

For certain aspects of the proposed Data Management capability, KPMG has opted to partner with Informatica and leverage their strength of offering within this domain. The key data capability domains where we have considered an non-native Azure solutions are as follows

Data Quality and Lineage through the use of the *Informatica Data Quality* and *Enterprise Data Catalog (EDC)* toolset to establish a robust Data Management and Governance capability across the AV data ecosystem.

Data Integration through the use of the *Informatica PowerCenter* toolset to complement the integration and transformation provided by native Azure integrations services such as Azure ADF and Azure Databricks.

Master Data Management through the use of *Informatica MDM* to enable the proper governance and operational execution of master data processes to support the platform and reporting.

Informatica is a tried & proven global leader in data management solutions, is part owned by Microsoft & has extensive product offerings on Azure Marketplace – a marketplace that offers 3rd party products designed, certified and optimised to run on the Azure stack - making it easy for AV & KPMG to procure and provision software & solutions as required. With KPMG being a strategic partner of Informatica, you can rest assured your organisation's needs will be met; be it in training & support, proprietary accelerators or knowledge sharing.

Whilst Informatica's MDM product is currently unavailable on Marketplace, we propose to easily integrate this product into our solution stack. Informatica's MDM is supported on Azure Cloud as Infrastructure as a Service (IaaS) by using a Virtual Machine (VM) dedicated to Master Data Management.

We have strong industry experience and a unrivalled implementation knowledge of Microsoft Azure & Informatica products. This strength of the KPMG, Microsoft & Informatica partnership will provide AV with the best in thought leadership, engineering, innovation & technology, future proofing your investment, furthering your mission to deliver the best possible service & care to all Victorians.

3. Our Proposed Solution

3.2. Solution Architecture

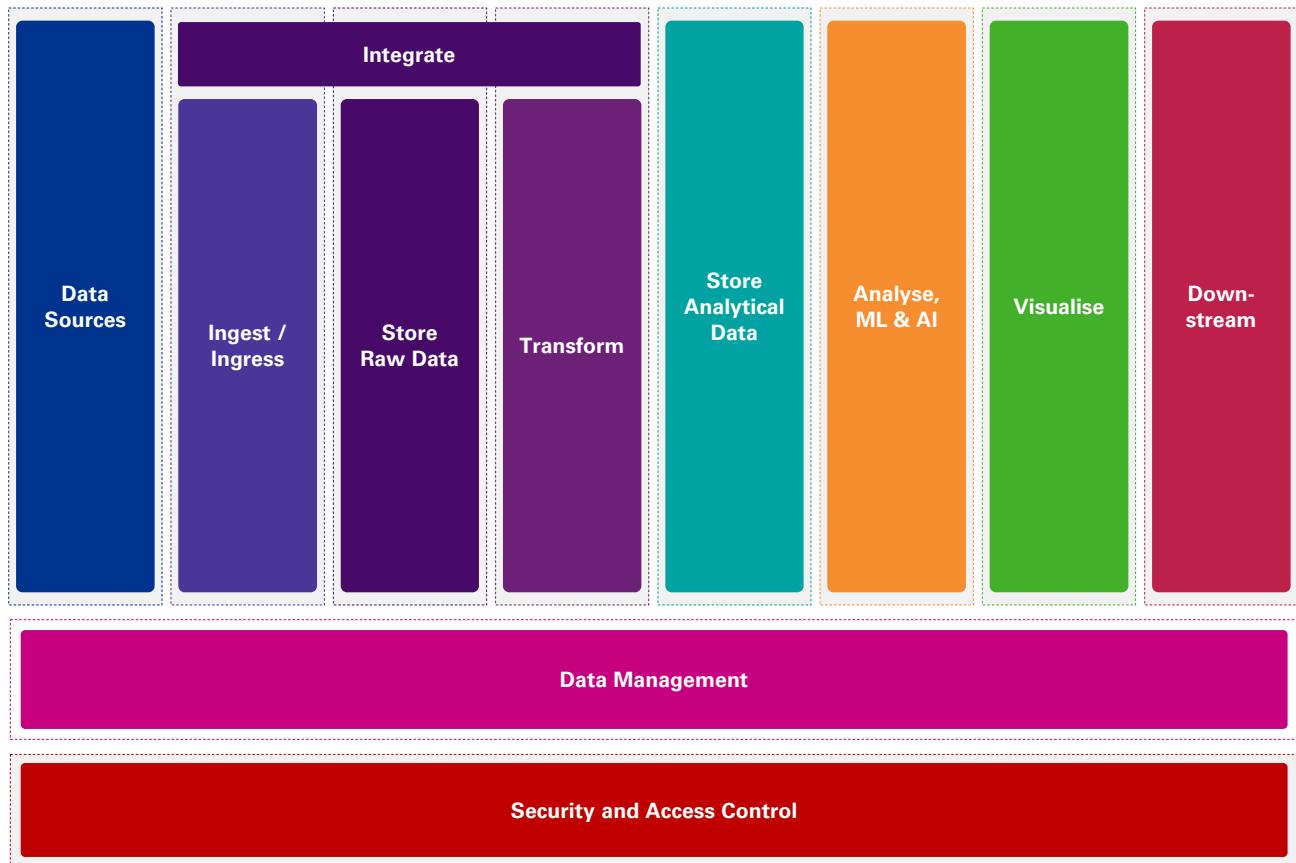
3.2.1. Functional Architecture – Capabilities required in the solution – Summary View

The building blocks required of a modern predictive analytics ecosystem form the basis of the reference architecture design we have developed for the AV platform to ensure the final solution design is modern, scalable, resilient and manageable.

Building blocks of the Predictive analytics platform

At its core, simple and modular architecture is a key guiding principle for the platform that consists of 8x foundational layers to support AV's current use cases as well as capability to support and future functionality or emerging need.

The architecture design is simple to enable ease of modular development and effort to maintain. Pluggable architecture allows easy extension and scaling of the platform. Components and services are turned on as required to deliver business value and help manage complexity and costs.



Different components in summary

The Integration layer will ingest data from various sources. Raw data can be stored indefinitely and/or passed to the transformation layer to aggregate and manipulate accordingly for further downstream manipulation and flow into the Analytical data store. Once data is available for consumption, advanced analytics can be performed as well as embedded machine learning and AI-driven solutions. The output can be visualised with self-service reporting and ad-hoc querying using a number of tools and/or passed to downstream applications. The Data Management layer addresses the single source of truth requirements for data through capability that will deliver defining catalogues, meta tags and data lineage whilst the security and access controls apply security principles to AV's critical asset, its data.

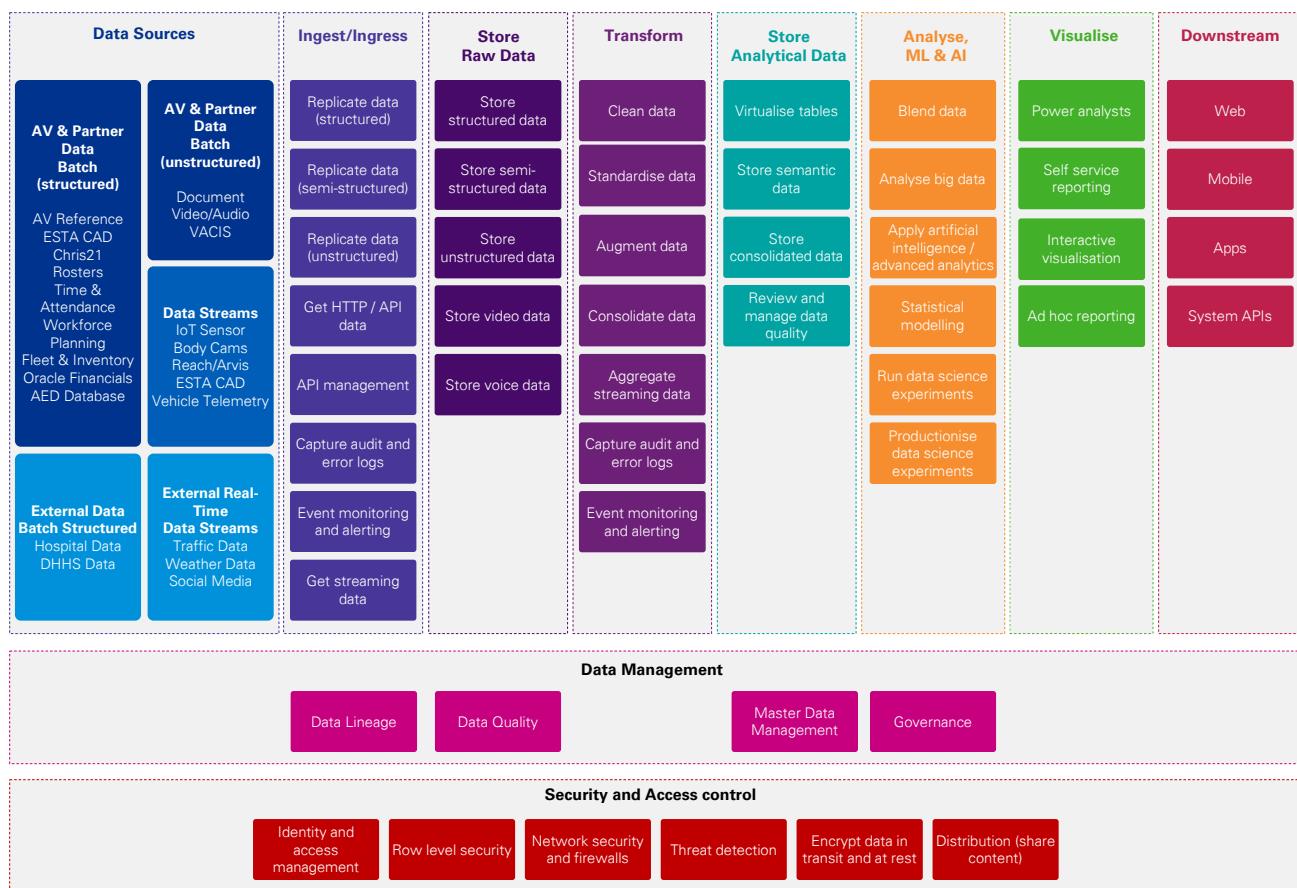
3. Our Proposed Solution

3.2. Solution Architecture

3.2.2. Functional Architecture – Capabilities required in the solution – Detailed View

Detailed core capabilities required for Predictive Analytics Platform

AV sources its data from multiple partners - batch structured and unstructured, data streams in real-time, as well as external data sources that include Department of Health and Human Services, Bureau of Meteorology, VicRoads, etc. Collected data will support Lambda architecture and will ingest data using batch and real-time streaming. The platform will store raw data as a point of reference for future (indefinitely) and passing the data to transformational layer for further manipulation including cleaning, standardising, consolidation and aggregation. Transformed data will be stored in an analytical data store and consumed by the advanced analytics, ML & AI Layer for predictive modelling and Data Science as well as serving as a foundational layer for service data analysts with visualisations/self-service and ad-hoc querying.



Progressive build to scale capability

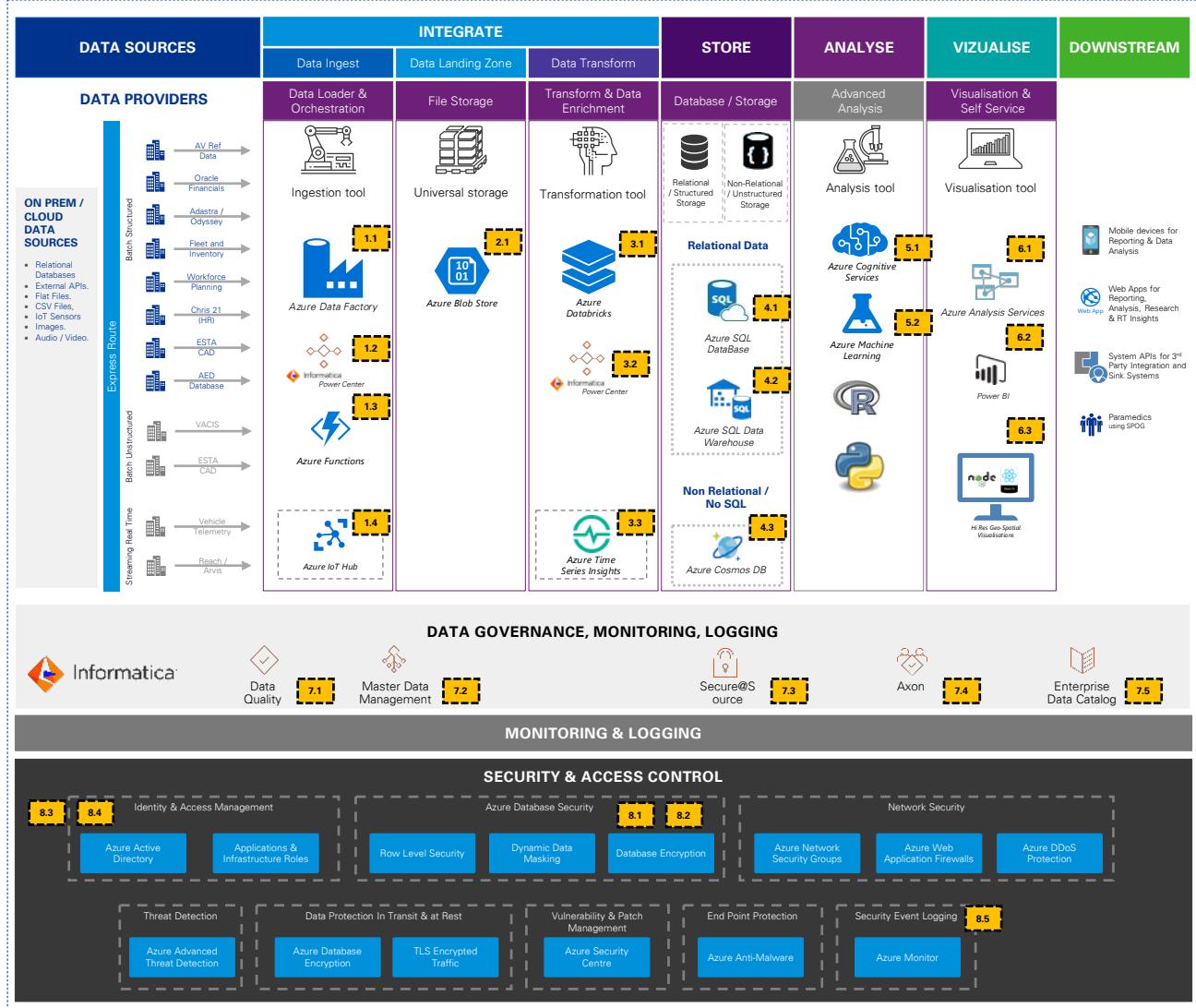
Establishing a new platform with a modern architecture and ingesting data from large number of data sources with various data types and velocity is a complex and challenging task. Progressive build will ensure that the capabilities are realised via activation of technology components. In the first instance, establishing the base platform and core services will need to be deployed to start utilising the platform. Next data focussed enablement to bulk load of existing EDW and commencing to stream real-time data in order to start using the Single Pane of Glass use-case(s) in real-life scenarios. Once the solid foundation is established, additional components and functionality will be brought on-line to support Advanced Analytics, Machine Learning and Data Science.

3. Our Proposed Solution

3.2. Solution Architecture

3.2.3. Technical Architecture – Products and Solutions

The Predictive Analytics Platform will meet AV's core capabilities (Ingest, Transform, Store, Analyse, Visualise) by using best of breed Informatica & Microsoft Azure Cloud offering. Microsoft Azure is a collection of various cloud computing services comprising of leading open-source, proprietary technologies, and 3rd party products. Informatica's data management products chosen in our delivery are available via Azure Marketplace. Each core capability can be met using a number of alternatives. Each numbered technical component is explained in subsequent sections.



The above diagram depicts the technology stack proposed to meet AV's capabilities. **Data Ingestion & Orchestration** can be performed using Azure Data Factory (ADF), Informatica PowerCenter, Azure Functions, Azure Databricks, and IoT Hubs. For most part, ADF or PowerCenter will source and orchestrate data workflows from various sources. External and real-time data will be ingested using IoT Hub and Azure Service Bus through the use of Azure Functions. **Raw data landing** will be processed into Azure Blob Storage. **Transformation** will be performed using Databricks, PowerCenter or ADF. **Transformed relational data** will be loaded stored in Azure SQL Data Warehouse or Azure SQL Database managed instance. **Transformed non-relational data** will be loaded into Azure Cosmos DB including document and JSON files. For **Advanced Analytics**, Azure Machine Learning services will be used for Data Science. Power BI & Azure Analysis Services will be used to **visualise** the data.

3. Our Proposed Solution

3.2. Solution Architecture

3.2.3.1. Data Integration Layer

The purpose of the data integration layer is to support data ingestion batch structured, semi-structured, unstructured including video & voice, real-time streaming, and external API connectivity. Data integration layer will be built following industry's best practices and proven patterns. The platform will provide data integration and orchestration to source the data from various sources including, but not limited to, batch structured & unstructured, real-time streaming datasets, external batch & streaming data sources via the use of various Azure Cloud components.

Capability	Technology	Description
Data Ingestion	<p>Ingest batch structured, semi-structured, unstructured including video & voice</p> <p>1.1  Azure Data Factory</p>	<p>Azure Data Factory is a cloud-based data integration (ETL) tool designed to create, schedule and manage data integration at scale. It has over 70 available data source connectors and a friendly and easy to use graphical user interface.</p> <p>ADF automates the movement and transformation of data and allows to load data from various data sources and monitor ingest, transform, and publish steps through a rich visual interface.</p> <ul style="list-style-type: none"> • Integrates easily with other Azure services • Does not require additional hardware, runs as a service • Boasts strong security • Familiar interface to Microsoft products i.e. SSIS • Better for larger orchestration strategy and supports using "cloud-first" approach <p><i>Azure Data Factory supports more features that are geared toward moving the data and workflow orchestration. ADF focusses on the ELT vs ETL as more traditional PowerCenter offering. For batch orchestration, ADF is a better choice.</i></p>
	<p>1.2  Informatica PowerCenter</p>	<p>Informatica's PowerCenter provides meta-data driven data integration that delivers data ingestion quicker than manual coding. PowerCenter integrates with other Informatica tools for easy developer collaboration and prototyping, as well as Azure Marketplace offering.</p> <ul style="list-style-type: none"> • Data Quality - Completeness: Data not missing or unusable, Conformity: Data is stored in a standard format, Consistency: Data values don't give conflicting information, Accuracy: Data is not incorrect or out of date, Duplicates: Data records aren't repeated, and Integrity: Preserve data as recorded at the time of retrieval • Performance - Big Data / On-Premise/ Cloud compatibility, Push Down Optimization, Deals With Partitioned Tables Efficiently, Bulk Extract/Load, Option Disable Triggers, Generate IDs, Caching Techniques, and Parallel Processing <p><i>PowerCenter offers strong ETL capabilities that are supported within AV's ecosystem. PowerCenter is geared more towards traditional ETL whilst ADF is a workflow orchestration engine that can call various Azure services to perform additional tasks. For ingestion and complex transformations, PowerCenter may be a better choice.</i></p>
Streaming real-time data	<p>1.3  Azure IoT Hub</p>	<p>IoT Hub is a managed service, hosted in the cloud, that acts as a central message hub for bi-directional communication between IoT application and the devices it manages.</p> <p>IoT hub has no limitation on number of devices and cheaper. Each device/sensor has a virtual clone created in the cloud. Cloud to device and Device to Cloud two way communication is possible. It is ideal for ingesting sensor data, as well as pushing data back out into the field, making it an essential feature for Edge computing.</p> <ul style="list-style-type: none"> • Future proof for Edge computing • Bi-directional communication allows firmware update on connected devices as needed • Allows to control the device by sending instructions i.e. predicting an operational fault using Machine Learning Services and switching off the device before the fault even happens. <p><i>Our recommendation is to use IoT Hub to allow device connectivity, lower cost of ownership, and future proofing the architecture</i></p>
Service bus (API)	<p>1.4  Azure Functions</p>	<p>Azure Functions is a serverless compute service that enables running code on-demand without having to explicitly provision or manage infrastructure. Azure Functions are used to run scripts or piece of code in response to a variety of events.</p> <p>Provides foundations for building highly scalable APIs. Azure Functions come with a collection of built-in HTTP triggers and bindings, which make it easy to author an endpoint in a variety of languages, including Node.js, C#, and more.</p> <ul style="list-style-type: none"> • Simple approach to deploying code in the cloud • Cost effective and scalable serverless computing • Multi code support - C#, .NET, JavaScript or NodeJS code <p><i>Our recommendation is to use the Azure Functions for serverless computing, particularly enabling Microservices API architecture to support AV's integration requirement for automated, standardised interfaces to access data</i></p>

3. Our Proposed Solution

3.2. Solution Architecture

3.2.3.2. Data Transformation Layer

The Transformation layer will support addressing the need for cleaning and standardising Structured/Semi-Structured/Unstructured data into schema-on-read format, transform unstructured data to schema-on-write using Polybase and consolidate and aggregate data.

	Capability	Technology	Description
Store Raw Data	Land and store batch structured, semi-structured, unstructured including video & voice	2.1  Azure Blob Store	<p>Azure Blob Storage is a low cost, serverless service, flexible and scalable object storage built in data consistency verification upon data change. The hot, cool and archive storage tiers allow fine tuning of cost separation based on data access needs. Azure Blob provides cheaper option for storage and data operations and built for frequent and fast data retrieval.</p> <ul style="list-style-type: none"> Desired option for raw data landing Can store billions of objects including images, videos, audio, documents and other data types Automatically scales as data is uploaded. Maximum storage limit of 500TB. <p><i>Current recommendation is to use the Blob Storage as a landing area for all raw data in its natural format.</i></p>
Transform	Clean and standardise Structured/Semi-Structured/Unstructured data into schema-on-read format transform unstructured data to schema-on-write using Polybase consolidate and aggregate data	3.1  Azure Databricks	<p>Azure Databricks is an Apache Spark-based analytics platform optimized for the Microsoft Azure cloud services platform. Designed with the founders of Apache Spark, Databricks is integrated with Azure to provide one-click setup, streamlined workflows, and an interactive workspace that enables collaboration between data scientists, data engineers, and business analysts.</p> <ul style="list-style-type: none"> Perform an ETL (extract, transform, and load data) Extract data from Blob Store into Azure Databricks, Run transformations on the data and pipe the transformed data into Azure SQL Data Warehouse via Polybase. <p><i>With the "cloud-first" approach, we recommend Azure Databrick for the full end-to-end workflow, collaboration and interactive workspaces that has multi language support for complex, on-the-fly transformations ,with a focus on ELT.</i></p>
	Streaming real-time data	3.2  Informatica PowerCenter	<p>Informatica's PowerCenter is a widely used extraction, transformation and loading (ETL) tool used in building enterprise data warehouses</p> <ul style="list-style-type: none"> Transformation is a repository object that generates (SQL Source Qualifier, Lookup, Sequence Generator, Aggregator, Rank, etc..), modifies (Filter, Sorter, Expression, etc..), or passes (Update Strategy, Joiner, etc..) data. Informatica supports drag-and-drop, intuitive GUI based transformations With the huge different-functionalities of Informatica transformations, it can handle all business requirements avoiding overhead to develop custom transformations. Informatica has improved data lineage and debugging capabilities <p><i>There is a certain degree of familiarity with PowerCenter within AV's ecosystem, as such, there may be a significant learning curve for the existing resources to move new toolset. However, both Azure Databricks and PowerCenter can be used to complement each other in a more traditional ETL sense (PowerCenter) vs. ELT sense (Databricks),</i></p>

3. Our Proposed Solution

3.2. Solution Architecture

3.2.3.3. Data Storage Layer

The Data Storage layer will support storage of relational transformed/consolidated/semantic data in an analytical store which is a solid foundation for Analytics, ML & AI. Storage layer will also store non-relational/unstructured & streaming data. Storage of transformed relational data will be loaded and stored in a dimensional model

Capability	Technology	Description
Store Analytical Data	 4.1	<p>Azure SQL Database Managed Instance is the intelligent, fully managed relational cloud database service that provides the broadest SQL Server engine compatibility. It has built-in intelligence that learns app patterns and adapts to maximise performance, reliability and data protection.</p> <ul style="list-style-type: none"> Traditional SQL storage optimized for CRUD operations. Can be used for Data warehousing. Current maximum data size of 8TB. Provides lower cost and lower maintenance required. Supports Dynamic Data Masking, Automatic Tuning and Intelligent Insights on Performance. Azure SQL offers many other features like SQL threat detection, Data encryption at rest, and Azure AD integration. SQL DB can support up to 6,400 concurrent queries and 32k active connections, where SQL DW can only support up to 32 concurrent queries and 1,024 active connections. SQL DB is a more pragmatic solution if intended to be used for a dashboard with thousands of users. <p><i>Overall, a better choice for data warehouse with data max 4TB and large amount of users. Based on the current size of the EDW, and taking into account data growth projection with on-boarding additional data streams, we would recommend the Azure SQL Data Warehouse for future proofing the design.</i></p>
	 4.2	<p>Azure SQL Data Warehouse is a high-performance, globally available, lower-cost secure cloud data warehouse. It is optimized for large data analytics performance with features such as 128 concurrent query execution and storage of unlimited columnar data.</p> <ul style="list-style-type: none"> Designed for data analytics tasks and working with larger workloads using massive parallel processing (>1TB). Unlimited storage capacity Ability to pause and resume the data base if/when out of operational hours More complex to maintain and plan. Supports Polybase T-SQL queries. Does not support Replication, needs to be set-up manual. Also does not support in memory OLTP. <p><i>Current recommendation for the better choice for a massive data warehouse implementation with unlimited storage, massively parallel processing, and a key component of a big data solution.</i></p>
Store non-relational/unstructured & streaming data	 4.3	<p>Azure Cosmos DB is a good option for storing non-relational, unstructured and time series data. There are 5 different consistency levels supported by CosmosDB including Eventual Consistency, Full Consistency, etc.</p> <ul style="list-style-type: none"> Multi-model database service Highly scalable Fast, single-digit-millisecond data access via APIs including SQL, MongoDB, Cassandra, Tables, or Gremlin Well suited for Timeseries data & storing processed IoT sensor data. The data can be indexed on all fields unlike MongoDB, Hbase, etc. Graph API provides support for storing massive graphs with billions of vertices and edges <p><i>Our recommendation for storing non-relational, unstructured, time series and graph data</i></p>

3. Our Proposed Solution

3.2. Solution Architecture

3.2.3.4. Data Analysis and Data Science Layer

In essence, this is where big data analytics comes to life. This layer allows users to play with the data in a meaningful way, enabling the mashing up of data for scientific experimentation, the application of statistical modelling techniques like regression, or the construction of artificial intelligence products for advance, automated decision making, for example.

Capability	Technology	Description
Analytics, ML & AI	5.1  Azure Cognitive Services	<p>Cognitive Services provides sophisticated Speech, Image, and Video Analytics, Semantic Search capabilities and Natural Language Understanding. Could be used for Building Chatbots, Facial Recognition, Speech Recognition, Computer Vision.</p> <ul style="list-style-type: none">• Support for vision, speech, language, knowledge and search capabilities• API connectivity• Foundation for intelligent apps <p><i>Consider using on a roadmap to Advanced Analytics and Artificial Intelligence to support AI use-cases</i></p>
	5.2  Azure Machine Learning	<p>Azure Machine Learning Services provides end-to-end data science platform simplifies and accelerates the building, training and deployment of machine learning models, improves productivity using auto scaling compute and DevOps for machine learning and seamlessly deploys models to the cloud. Machine learning services supports smart data discovery via pre-built algorithms, workbench style interface for Machine Learning Experiments, open source programming languages like Python & R, offers pre-canned out of the box algorithms to experiment with data and various use-cases.</p> <ul style="list-style-type: none">• Cloud based offering• Easy to use interface• Supports open source languages• Large collection of pre-built algorithms <p><i>Use Azure Machine Learning Services for the full end-to-end data science capabilities and model management</i></p>

3. Our Proposed Solution

3.2. Solution Architecture

3.2.3.5. Data Delivery and Visualisation

The Visualisation Layer will support serving data for consumption and interactive visualisation, self-service and ad-hoc reporting. For downstream Transformed Enriched Data Analysis, Azure Analysis Services can be used to build a semantic model for data. It can also increase system performance when analysing data.

Capability	Technology	Description
Visualise Serve data for consumption and interactive visualisation, self-service and ad-hoc reporting	6.1  Azure Analysis Services	<p>An analytical data engine used in decision support and business analytics. It provides enterprise-grade semantic/abstraction data models for business reports and client applications such as Power BI, Excel, and other data visualization tools. Many big data solutions emulate traditional enterprise business intelligence architectures by including a centralized online analytical processing (OLAP) data model on which reports, dashboards, and interactive "slice and dice" analysis can be based.</p> <ul style="list-style-type: none"> Supports the creation of multidimensional and tabular (relational modelling constructs using tables and columns) Analyse large dataset using highly optimized in-memory engine Fully managed platform as a service (PaaS) Boost performance as an intermediate layer between storage and visualisation <p><i>Current recommendation is to not spin up and use Azure Analysis Services until and unless a use case/scenario is encountered where using Store Layer component ie Azure SQL DB or Power BI alone results in unacceptable lag and unresponsiveness for the users. This is in line with the design principle of avoiding introducing complexity within the design unless necessary.</i></p>
	6.2  Power BI	<p>Power BI is a PaaS solution that enables data analysts to create interactive data visualizations based on data models in an OLAP model or directly from an analytical data store. Advanced Analytics can also be done with Power BI via Machine Learning & R integration along with the data connectivity and pre-canned visual library.</p> <ul style="list-style-type: none"> Easily extract source data, create a dataset, transform or manipulate the data, visualize the data and publish the resulting reports and dashboards. Ability to create new measures or dimensions without requiring IT involvement. Visualizations are best in class and continually updated from the user community. Interactive geo-map visualizations are empowered by Bing Maps. Utilises the same technology as Analysis Services, an in-memory analytics engine and columnar database that supports tabular data store structures used by Power Pivot. The DAX (Data Analysis Expressions) scripting language that is similar to Excel, is a relatively simple construct used to create calculated columns and measures. Easy to secure with access control through Active Directory (AD) <p><i>Current recommendation is to use Power BI for ad-hoc and interactive self-service reporting. Create the data model directly in Power BI that will provide support for easier and faster way for users to browse massive amounts of data, visualise and collaborate. Power BI will be used to complement Hi-Res Geo-Spatial Visualisations</i></p>
	6.3  Hi-Res Geo-Spatial Visualisation	<p>Using Node.js & React.js, deliver Hi-Res Geo-Spatial Visualisations in an online & interactive dash-boarding mode, built on an integrated data platform.</p> <ul style="list-style-type: none"> Highly customisable Meets AV's SPOG use-cases <p><i>Best option for custom visualisation that support a spatial network view showing Ambulance Routes can be built as easy to use, built-in linked visualizations</i></p>

3. Our Proposed Solution

3.2. Solution Architecture

3.2.3.6. Data Management (our view on data governance and quality management)

Data Management will be achieved via KPMG's Advanced Data Management accelerator and body of knowledge leveraging KPMG's global expertise in data management & governance. We will use proven industry design patterns, and the best of breed in technology. We've partnered with Informatica - a strategic product solution, a Gartner Magic Quadrant leader, supported on Azure, with turnkey offerings on Azure Marketplace – to bring the best possible Data Management capability for AV.

Data quality & consistency will be delivered through Informatica's Data Quality offering, providing capacity to measure, clean, deliver, report, discover, search, apply rule's & artificial intelligence across AV's data value chain.

Data lineage, profiling, statistics, & metadata will be met via Informatica's Enterprise Data Catalog (EDC). Further, the offering will provide, semantic search, impact analysis, relationship discovery, as well as statistics. EDC supports cross-artefact lineage, semantic search, and impact analysis for full trail audit & regulatory analytics. Metadata is exposed if required and can be fed into other tiers within the proposed platform, through API if required.

We've taken a coherent approach to data management and governance. Our solution will integrate seamlessly and powerfully with other areas, such as operational data quality, lineage, relationship discovery, impact analysis, as well as semantic search & business glossary, all through a shared & open semantic metadata model. These services and features are critical in creating a next generation predictive analytics platform.

Capability	Description	Benefits	Product
Data Governance	Data Governance brings greater cohesion between the activities of the business community and those of the technical community that support them. Data Governance provides foundation that enables flexible, agile access to data.	<ul style="list-style-type: none">Allows business users access dataUnderstanding key concepts and definitions	<ul style="list-style-type: none">Informatica Enterprise Data Catalog (EDC)Axon
	Data lineage includes the data's origins, what happens to it and where it moves over time. Data lineage gives visibility while greatly simplifying the ability to trace errors back to the root cause in a data analytics process.	<ul style="list-style-type: none">Target to Source mappingData Glossary & DictionaryChange Management	<ul style="list-style-type: none">EDC (Technical focus)Axon (Business focus)
Business Glossary	Business Glossary enables information stewards to develop, build and manage a common business vocabulary and make it available across an organization. Business Glossary provides a tool for making a contextual connection for understanding data objects .	<ul style="list-style-type: none">Clear business understandingDemocratization of dataData securityEasily on board new & trusted dataAuthoritative data source	<ul style="list-style-type: none">EDC (Technical focus)Axon (Business focus)
Data Quality	Data quality refers to the condition of a set of values of qualitative or quantitative variables. There are many definitions of data quality but data is generally considered high quality if it is fit for its intended use in operations, decision making and planning.	<ul style="list-style-type: none">Reduced costsLess time spent reconciling dataImprove confidence in analytical systemsIncreased customer satisfaction	<ul style="list-style-type: none">Informatica Data Quality (DQ)
Master Data Management	In business, Master Data Management (MDM) is a method used to define and manage the critical data of an organization to provide, with data integration, a single point of reference. The data that is mastered may include reference data- the set of permissible values, and the analytical data that supports decision making.	<ul style="list-style-type: none">Eliminate poor quality dataAuthoritative sourceConsistencyAgility, faster response to change	<ul style="list-style-type: none">Informatica MDM

3. Our Proposed Solution

3.2. Solution Architecture

3.2.3.7. Data Management – Informatica product components

Capability	Technology	Description
Data Management	7.1	Consolidation of capabilities and tools, Data Quality brings together the most important business initiatives with high-quality, trusted, and governed data.
	7.2	A platform encompassing a broad range of data cleansing, transformation, and integration practices so that organisations data can be processed to identify, collect, transform, and repair data as a holistic catalogue.
	7.3	AV can use MDM to define and manage the critical data of an organization to provide, with data integration, a single point of reference. The data that is mastered may include reference data- the set of permissible values, and the analytical data that supports decision making
	7.4	Solution provides data security intelligence & analytics equipped to identify data risks & enables businesses to mitigate them. AV's data policies & role based security can be met through Secure@Source.
	7.5	A platform used for Data Governance, Data Lineage and Business Glossary. Uses a number of interconnected products like PowerCenter and Data Quality to offer end-to-end intelligent solution
		Informatica's Enterprise Data Catalogue supports data lineage, profiling, statistics, & metadata and offers semantic search, impact analysis, relationship discovery, as well as statistics.
		The solution can support AV's requirements for cross-artefact lineage, semantic search, and impact analysis for full trail audit & regulatory analytics.

3.2.4. Azure Out of the Box (OOTB)

Microsoft Azure is a cloud services offering that is designed to help organisation meet business challenges at low cost and large scale. Azure offers the best of traditional Microsoft products like Azure SQL Databases and more advanced bleeding edge serverless computing services. Azure Marketplace is another offering that introduces 3rd party products designed, certified and optimised to run on the Azure stack. With a vast product mix on offer, KPMG's Predictive Analytics Platform for AV will utilise as much of Microsoft Azure technology stack as possible. For the proposed Data Management capability, KPMG opted to leverage our partnership with Informatica and leverage their strength of offering within this domain. It is worth noting that the bulk of Informatica's products are available on Azure Marketplace. Whilst Informatica's MDM product is currently unavailable on Marketplace, we can comfortably make provisions to integrate this product into our solution. Informatica's MDM is supported on Azure Cloud as Infrastructure as a Service (IaaS) by using a Virtual Machine (VM) dedicated to Master Data Management.

3. Our Proposed Solution

3.2. Solution Architecture

3.2.5. Licensing and Availability of Informatica Software Products on Microsoft Azure Marketplace

Azure Marketplace is the store for discovering technical applications built for or built on Microsoft Azure. With solutions and offerings from 300K+ partner ecosystem, it combines Microsoft Azure's ecosystem of solutions and services into a single, unified platform where developers can discover, trial and buy solutions in a just a few clicks. Having chosen Informatica as a Data Management partner, below outlines current availability on Azure.

KPMG Solution Components	Data Integration	Data Quality Services	Master Data Management	Lineage, Impact Analysis, Relationship Discovery, Semantic Search, Glossary	Data Governance	Security & Privacy
Informatica Product Name	Power Center	Data Quality	Master Data Management	Enterprise Data Catalogue	Axon	Secure @ Source
Supported on Azure	✓	✓	✓	✓	✓	✓
Azure Marketplace	✓	✓	✗	✓	✗	✗

3.2.6. Reusing existing Informatica Licences

With KPMG being a strategic partner of Informatica the customer is entitled to a discount off list price. Informatica is customer first and can work flexibly to find the most financially viable option for the customer if the products aren't available on marketplace. This includes conversion of existing licenses. The majority of our (Informatica's) products are on marketplace however we can discuss planned dates of future releases if unavailable at this moment in time.

3.2.7. Key Assumptions Regarding Solution Architecture

- Architectural framework & principles wont change.
- No material change to existing laws & regulations.
- The allocated funding will be sufficient to realize the whole of the solution architecture.
- All MS Azure & Informatica products, as detailed in our solution architecture, will be available for the next decade.
- Material changes in scope will be reviewed by both parties, through an architectural review board.
- Data is accessible through any tier of the N-Tier architecture.
- AV has the capacity & appropriate SLA's & Interface Agreements in place to push & pull data in & out of the platform.
- Information assets are managed by an accountable custodian.
- Data can be easily & readily migrated off all legacy systems into the cloud, including enterprise data warehouses, as & when required. Special provisions aren't required, e.g. Microsoft Databox.
- Whilst an option, AV will not spin up or spin down any tier with in the stack on a regular basis as means to save money. As such, not interrupting any of the tiers or services. E.g. "blow away & rebuild"

3. Our Proposed Solution

3.2. Solution Architecture

3.2.8. Environments (Dev, Test, Prod)

KPMG will use the DevOps framework to provide agile application lifecycle management for AV's Predictive Analytics Platform. The DevOps framework includes source code management and branching strategies, collaboration tools, code repositories, and continuous integration via automated deployment of code and Azure Services through the deployment lifecycle.

A typical Continuous Integration / Continuous Deployment (CD/CI) configuration including release management will consist of at least 3x environments within the Azure Tenancy:

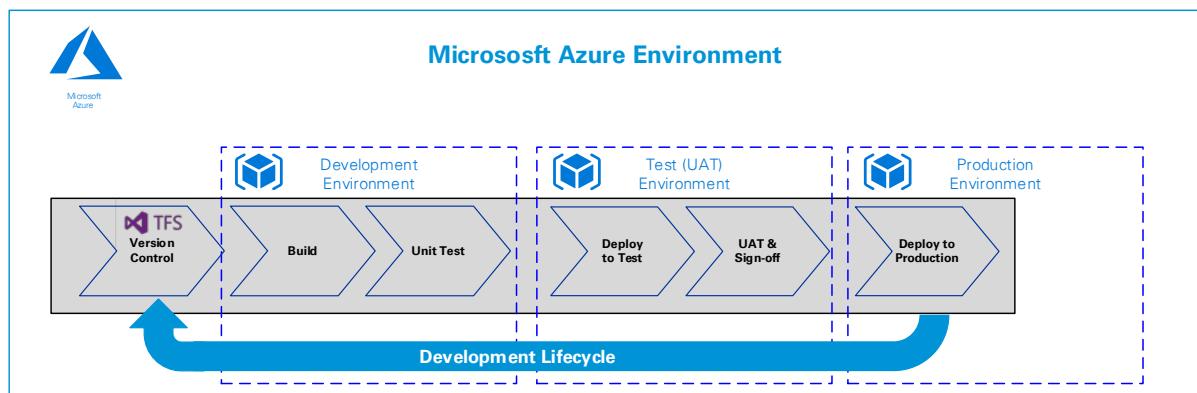
- Development
- Test (User Acceptance Testing)
- Production

Depending on the services used and AV's requirements, these environments can be deployed as additional slots within a deployment or as completely isolated environments within an Azure Resource Group.

The release cycle approach will depend on the DevOps structure set up to support the development team. Release Management can control the flow and delivery of the cycles to mitigate risk of system outages and upgrades. There should be at least 3x environments; Development > Test (UAT) > Production. There will also be a Disaster Recovery (DR) environment for redundancy.

Diagram depicts typical development lifecycle. Any development will be performed in a Development environment. For data, system and integration testing, the changes will be promoted to Test environment, which also be used for User Acceptance Testing. Once the changes are fully tested and signed-off, the code can be productionised by the deployment to Production environment.

KPMG will assist with setting up the DevOps structure, setting up the 3x environments, as well as the Disaster Recovery environment, and implement Azure Release Management to assist with software deployments.



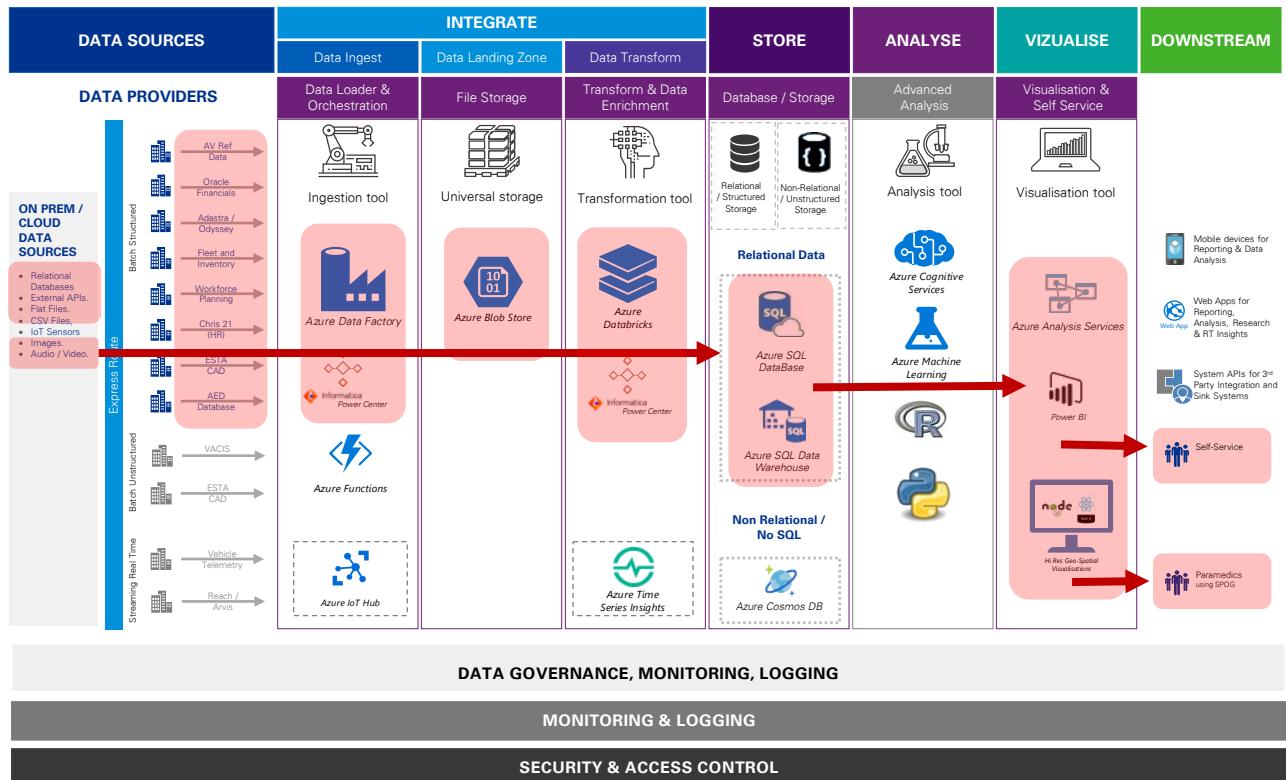
3. Our Proposed Solution

3.2. Solution Architecture

3.2.9. Patterns within Technical Architecture

The Predictive Analytics Platform architecture will support a number of example technical patterns to support AV's mission critical objectives

Example Technical Pattern 1: Self-service analysis



This example pattern addresses the need for self-service reporting and ad-hoc analysis.

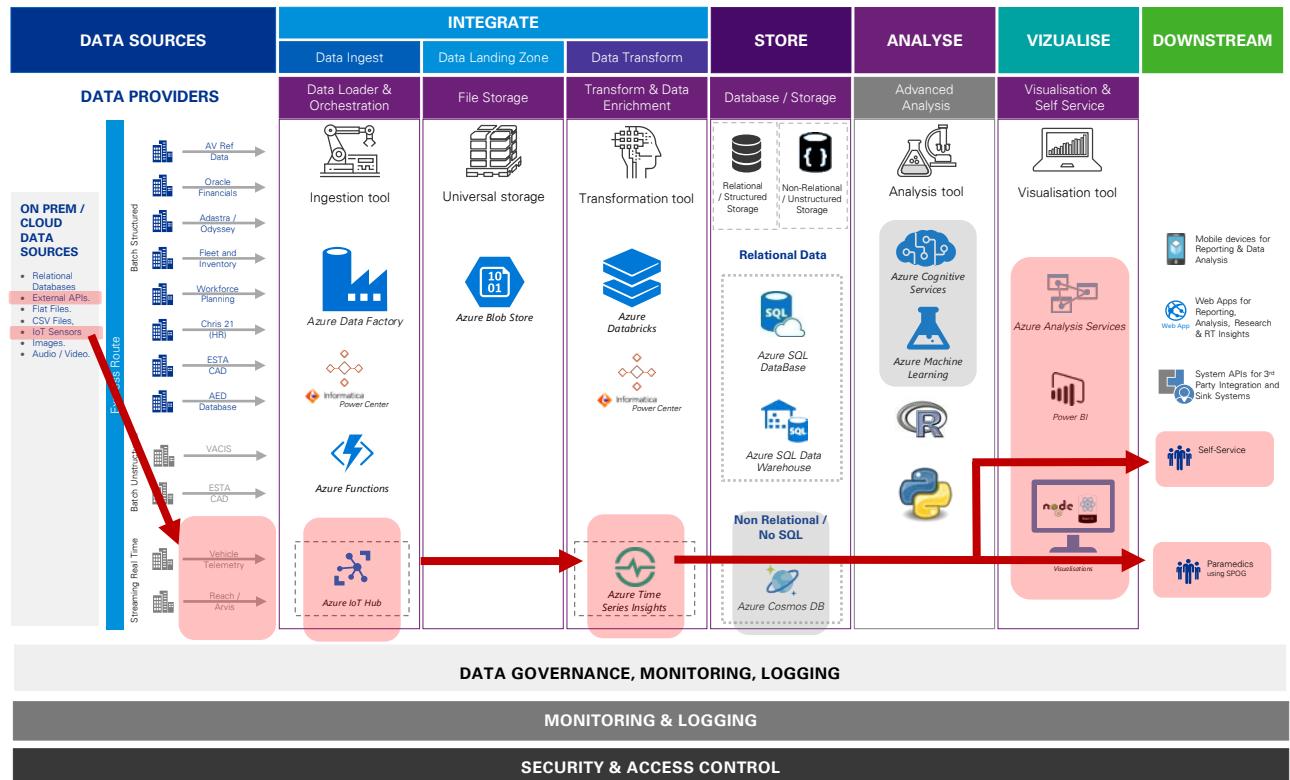
- Provides a view for analysts within the business that enables access to data tables and the ability to tailor reports.
- Provides a view for field operators via KPMG's Single Pane Of Glass.
- Self service analytics enabled for Business users to explore the subset of data to be able to derive insights.
- Build the data model as tables/views in Azure SQL DB or within Power BI itself for the semantic layer. If those methods, prove to not be performant enough for a particular use case, Azure Analysis Services could be leveraged to provide data analysts with access to the modelled subset of the data via the Azure Blob Storage.
- For a specific use-case of to support low latency data refresh, Azure Analysis Services could be directly connected to those source systems.
- Role based access control could be used to manage the security regardless of the service used for the Semantic Layer.

3. Our Proposed Solution

3.2. Solution Architecture

3.2.9. Patterns within Technical Architecture (con't)

Example Technical Pattern 2: Streaming data



This pattern addresses the need for streaming data reporting

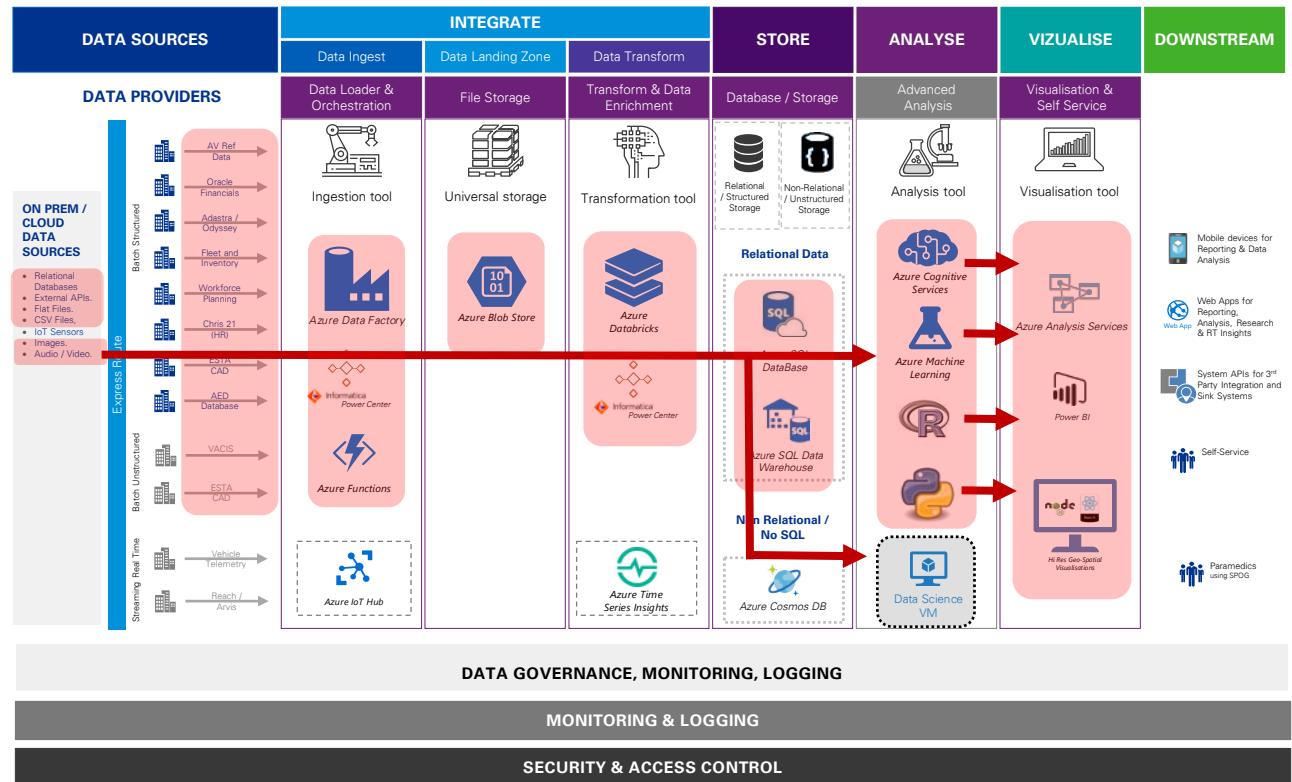
- The streaming data from the telemetry sensors can be ingested via the Azure IOT Hub.
- It can dynamically transformed and enriched on the fly via Azure Time Series Insights and passed to visualise
- The processed outputs can then be stored in the Azure Cosmos DB (where required), as the non relational store for enabling additional charting capabilities.

3. Our Proposed Solution

3.2. Solution Architecture

3.2.9. Patterns within Technical Architecture (con't)

Example Technical Pattern 3: Advanced Analytics



This pattern addresses the need for Analytics, ML & AI.

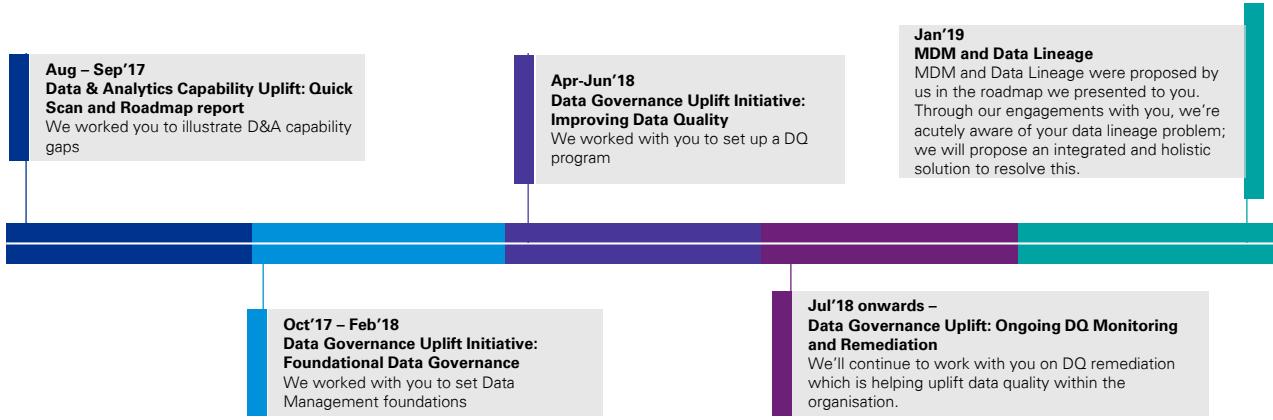
- Access to structured, semi-structured and unstructured data for Power Users - Data Scientists / Data Discoverers.
 - Machine learning, Predictive Modelling and Advanced Analytics use cases.
 - Analytics on unstructured datasets (e.g. PDF) for Natural Language Processing.
 - Rich multimedia, Speech, Image, Video and other sophisticated Analytics.
 - Other examples can include Chatbots, Facial Recognition, Speech Analytics.
 - Source data is stored in the Azure Blob Storage and exposed through advanced analysis tools.
 - Self-contained Data Science VM can be used as a low cost, easy to spin up sandbox environment for DEV and TEST of models, which is pre configured out of the box with modern tooling for exploratory analysis for Data Scientists, Data Engineers and sophisticated Data wranglers looking to derive insights.
 - Azure Machine Learning Services can then be used for pushing the model to Production and managing it's end to end lifecycle.

3. Our Proposed Solution

3.3. Master Data Management

3.3.1. Data Management at Ambulance Victoria

KPMG has worked alongside AV since 2017 to set the foundations of its data management capability; starting with setting up the Foundations of the data management function, KPMG has helped AV to take a structured approach towards information governance. **Our Data management journey at AV** is represented in the illustration below.



Master data Management was one of the 7 key **enterprise data capabilities** that KPMG has recommended for AV to focus on (refer to AV's enterprise data capability model on right). The **Data Governance Roadmap** for AV had planned for the MDM journey to begin in FY 2019, and we are glad that the predictive analytics platform will help to set the right foundations for MDM at AV.

The Operations restructure program, an end of life technology platform (Microsoft Dynamics), and subtle inconsistencies within key master data across source systems are some of the drivers that have accelerated the need of resolving the MDM problem at AV.

In this proposal, along with the MDM solution, we also focus on uplifting the **Business Glossary** capability for AV. Through a structured, holistic approach KPMG will facilitate better design and management of AV's master data to assist in the delivery of consistent and aligned information for business decisions.

We understand that despite significant process inefficiencies and inadequate systems for managing reference data, AV has continued to deliver strong performance by managing key business data through a series of manual interventions.

However, as AV plans to significantly modernise its technology landscape, there is a need for a strong data foundation which can enable AV to be agile and achieve optimal business outcomes. MDM will enable AV to achieve the following key benefits:

- 1. Start with Analytical MDM** to set a foundational capability which that then be extended for a wider adoption.
- 2. Start with focus on the master data domains contained in the AVDRS system** and the associated data domains like organisational Hierarchies, branches and stations and person location.
- 3. Build a foundational MDM solution**, that is focused on **delivering quick wins** and underpin your key technology project as these will get implemented.

This understanding is at the heart of our proposed solution and approach or MDM for AV.



3. Our Proposed Solution

3.3. Master Data Management

3.3.2. Scope and focus of the MDM work-stream

MDM is inherently difficult because it is **not just a technology problem**; it involves business process and culture change within an organization. Currently, at AV, the MDM problem exists because of a lack of data management processes to support MDM, lack of data standardization as different systems use different naming conventions and different hierarchies resulting in difficulties to develop seamless data flows across systems and confusions among users. There's also no technology solution to effectively manage master and reference data.

While we understand that MDM is a complex organisation wide problem, we agree with you that the current phase of work for MDM will help to establish the foundational capabilities for analytical MDM for AV.

The Scope of this work stream will specifically focus on:

1. **Agreement of in-scope data domains** and entities and assessment of impact of the changes in these entities across different systems – primarily integrating to AVRDS.
2. Agreement of **potential pathways and “best-fit” fixes** for a variety of issues with Master data (e.g. fix at source, integrate or externalise master data).
3. Agreement on the **functional definitions, processes and standards** for managing master data for “in-scope” entities.
4. **Assessment of the current technology platform** (AVDRS - Dynamics) and associated integrations to further inform the potential pathways for fixes – this will include architectural assessment of registry, hub-and-spoke type MDM patterns.
5. **Alignment with the data governance and the information architecture programs** to leverage the existing capabilities and working forums to accelerate the alignment of proposed resolutions with user community.
6. **Establish a technology solution (foundational capability)** to address high priority items within the current phase of work under the Predictive Analytics Platform.
7. **Implement tactical changes** may be needed to facilitate and support other major programs of work.
8. Approvals from stakeholders and communications to ensure minimal disruption to BAU functions.

NOT IN SCOPE:

1. Implementation of a full service, integrated MDM solution across all of AV master data
2. Resolution of data quality issues in the source systems.
3. Building extensive integration capabilities for the foundational MDM solution – some integration will be delivered for in-scope / key source systems.

We believe that the above scope will help AV to stay focused on resolving the immediate priorities with the master data associated with the organisational and locations hierarchies. In doing so, we will “test the waters” and lay the right foundation for the further extension of the MDM program. KPMG team is also keen to take this further by using the “flexible delivery pod” to add more scope and priorities that have not been included above. Please refer to the section on our engagement model for further details on using flex delivery pods.

3. Our Proposed Solution

3.3. Master Data Management

3.3.5. Our Approach for MDM and Data Management

Phase	Activities	Outcomes
Initiate	<ul style="list-style-type: none"> • Confirm detailed scope • Refine project approach and planning • Identify key stakeholders • Project kick-off 	<ul style="list-style-type: none"> • Agreed upon project approach, scope and planning (short-term and long-term) • Project structure • Agreed Stakeholder List
Assess	<ul style="list-style-type: none"> • Document and information gathering • Current state assessment: AVRDS, Source Systems, Target Systems • Conduct benchmarking • Develop future state vision • Define guiding principles and definitions • Stakeholder Analysis 	<ul style="list-style-type: none"> • AVRDS system assessment • Data quality and MDM process assessments • Finalised scope (incl. lineage mapping), approach • Gap analysis • Stakeholder engagement and change management plan
Design	<ul style="list-style-type: none"> • Analyse and finalise future state requirements • Conduct analysis of master data sources • Create high level future state design architecture • Define detailed governance model, standard operating model • Identify impacted parties; Develop Stakeholder Engagement & Change Management Plan 	<ul style="list-style-type: none"> • Optimised MDM governance and process design (incl. tooling) • Business Requirements and Design Document • Cleansed Master Data • Lineage Mapping • KPS, metrics to validate data quality
Implement Fixes	<ul style="list-style-type: none"> • Configure and deploy the MDM solution components on Azure • Build business rules and relationship for in-scope data • Integrate the MDM solution with the key in-scope systems agreed for reference data synchronisation and / or alignment • Document and communicate the changes the business process documentation • Conduct user training • Roll-out governance and operating model • Ongoing stakeholder engagement and change management • Prepare Project Tracking reports, manage PM forums 	<ul style="list-style-type: none"> • Recommendations for upstream systems data quality improvement • Implemented MDM governance and processes • Improved master data quality (where applicable to MDM platform) • Centralised Business Glossary
Monitor	<ul style="list-style-type: none"> • Validate Mapped Lineage • Conduct post implementation review 	<ul style="list-style-type: none"> • Post-implementation assessment of MDM governance and processes • Periodic assessment of data quality • Provide high-level roadmap for future reference data domains

Technologies to be used for the MDM work-stream: Please refer to “Section 3.2.3.7 Data Management Informatica Product Components” for details on Informatica, our proposed technology for data management.

3. Our Proposed Solution

3.4. Non-functional Requirements

3.4.1. Infrastructure Readiness for Azure Platform

The Predictive Analytics Platform will leverage AV's ESB & any & all integrations platforms, treating them as respective sources, using API's as well as native connectors as & where required to cater for pull & push modes of data movements. Further we will reference standard techniques, including software application API's, in software engineering to ensure application interoperability. Our technology stack & programmatic frameworks can cater for any & all specifications.

3.4.2. Accessibility

The solution will be built in order to be able to render websites through an administrative interface that meets the W3C WCAG 2.0 accessibility standards. As with other KPMG solutions, it will be tested on a 512 Kbps connection to ensure the application response time for page transition will be less than 5 seconds. The solution will allow for the integration of AV's existing active directory in order to provide AV staff with access using their existing corporate authentication credentials. The solution, being web-based, will operate within the web browser architecture with a mobile-first approach and an interface design that is responsive to a variety of screen resolutions. This will enable large fonts to be displayed within the browser or operating system whilst retaining detail and usability when the browser or application window is resized. The solution will also be accessible across all common browsers as they display webpages built on HTML5 and JavaScript, with the responsive design allowing the solution to be used on mobile devices operating Safari and Android browsers. The solution has previously been tested on 3G and 4G connections and will be operable by users across Victoria.

3.4.3. Archival and Backup

The Predictive Analytics Platform will support capability to archive relevant content.

Serverless compute and processing including Azure Data Factory, Azure Functions - No data is persisted on disk for serverless compute and processing components such as Azure Data Factory. The focus of backup and archive for these components will focus on the backup of configuration and code to a separate storage. This will be managed via AV's existing source code management repositories (or a source code management system to be set up by KPMG).

Database - Azure offers automated data snapshots / restoration points for Azure SQL. This is a backup retained for up to 7 to 35 days depending on the tier. For longer term retention, databases are backed up to the Azure Recovery Services Vault for up to 10 years. For Azure SQL Data warehouse backup long term retention, Microsoft recommends to use out of the box back-up and recovery features (automatic back-up) and for long-term storage-archiving, offload to blob store.

Blob storage - Blob Storage backups will be performed via asynchronous copy blob functionality scheduled / invoked through Azure Data Factory. Blob does not need to be backed up, there are no limitations to backup retention. There are 3x copies within the same data centre and 3x copies across different regions

3. Our Proposed Solution

3.4. Non-functional Requirements

3.4.4. Availability

The Predictive Analytics Platform will be designed to ensure the 99.9% uptime/availability for the production environment and non-production environment will have a minimum availability of 98%. The platform will be designed with geo-redundant storage in mind.

Geo-redundant storage (GRS) is designed to provide at least 99.99999999999999% (16 9's) durability of objects over a given year by replicating data to a secondary region.

The Azure products chosen for delivering the solution offer geo-redundancy and up-time guarantee

- Azure Blob Storage: 99.9%
- Azure Databricks: 99.95%
- Azure SQL Data Warehouse: 99.9%
- Azure Data Factory: 99.9%
- Azure CosmosDB: 99.9%
- Power BI: 99.9%

In addition, a Disaster Recovery (DR) resource group will be set up which will be focused on recovering from a catastrophic loss of application functionality. For example, if an Azure region hosting your application becomes unavailable, there is a plan for running the operations or accessing your data in another region.

Resiliency and high availability strategies are intended to handle temporary failure conditions. Executing this plan involves people, processes, and supporting applications that allow the system to continue functioning.

A good plan takes advantage of Azure features and augments them with application-specific strategies. The chosen response is determined by the importance of the application, the recovery point objective (RPO), and the recovery time objective (RTO).

KPMG will work with AV to design the solution to provide resiliency and redundancy within a single Australian Azure geographic region based on Read-access geo-redundant storage (RA-GRS) where data is replicated to another data centre in a secondary region, and also provides the option to read from the secondary region.

To monitor, record outage and availability statistics for monthly reporting, Azure Monitor will be used. It provides default availability logging for a number of Azure components including Azure Blob Storage, Azure Databricks, Azure Data Warehouse. Azure Data Factory provides logging of job success / failure but not component availability as this is fully resilient and managed by Microsoft.

	Details	Region	Availability Setup	Backup Setup	Logging Details
Azure Data Factory	Workflow, orchestration, ETL pipeline manager.		99.9% SLA	N/A	Detailed logs for every action for every activity stored in blob for Log Analytics
Azure Blob Storage	File landing zone capable of ingestions all data formats.		99.999999999999% SLA	Geo-redundant backup (X3)	Detailed logs for every action for every activity stored in blob for Log Analytics
Azure SQL Database	Data storage for the analytics platform.		99.99% SLA	Geo-redundant backup (X3)	Detailed logs for every action for every activity stored in blob for Log Analytics
Azure SQL Data Warehouse	High-performance, globally available, cloud data warehouse		99.99% SLA	Geo-redundant backup	Detailed logs for every action for every activity stored in blob for Log Analytics
Azure Cosmos DB	Globally distributed, multi-model database service for storing Unstructured & IoT Applications data		99.999 %SLA	Automatic backup, global replication	Detailed logs for every action for every activity stored in blob for Log Analytics

3. Our Proposed Solution

3.4. Non-functional Requirements

3.4.5. Compatibility

The Predictive Analytics Platform will be designed using Azure Cloud services that support industry interoperability standards including XML, JSON. It is anticipated that HL7 messages will need to be converted to JSON before sending them to the recipient platform for ingestion.

For streaming real-time data, IoT Hub allows devices to use the following protocols for device-side communications including MQTT & MQTT over WebSockets, AMQP & AMQP over WebSockets & HTTPS.

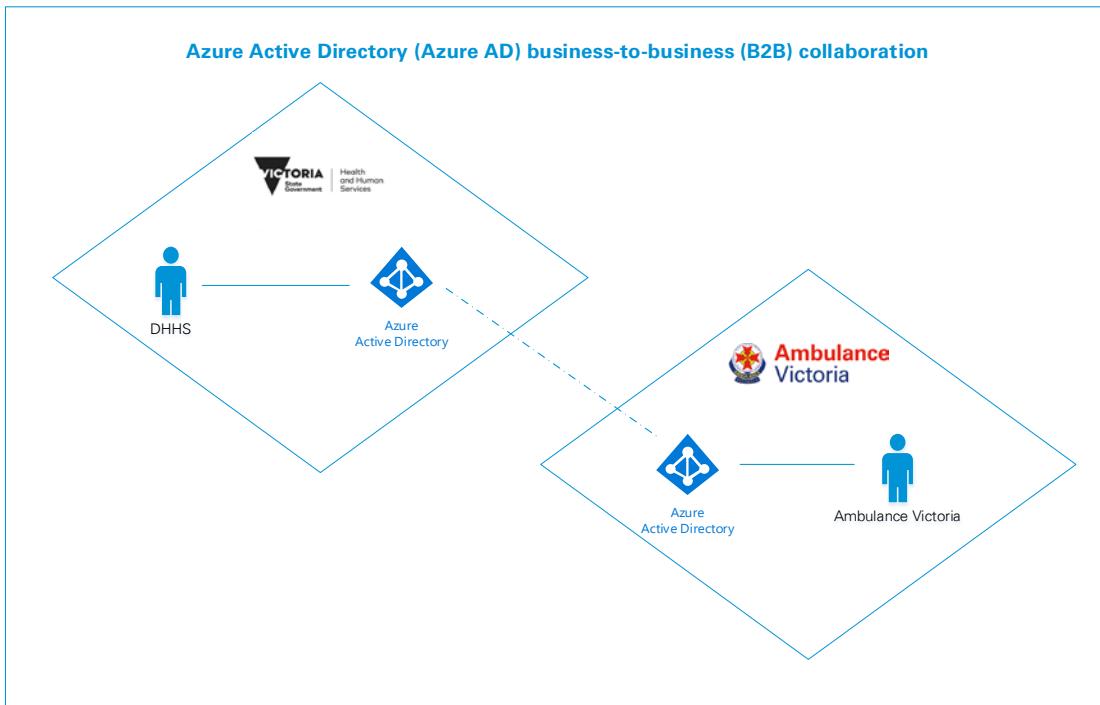
For ingestion and custom file interfaces, the platform supports, via ADF the following formats

- Text format including TXT & CSV
- JSON format
- Parquet format
- ORC format
- Avro format
- ODBC

The platform support Node.js and React.js, Python, R open source technologies. Most Azure components interact with open source stack.

Single Sign On will be provided using Azure Active Directory (AAD). AAD extends on-premises Active Directory into the cloud, enabling Ambulance Victoria users to use their primary organizational account to sign in to their domain-joined devices and company resources, as well as all of the web and SaaS applications needed to perform their job. Azure AD can be extended to integrate many SaaS applications, providing identity and access management, and enables user single sign-on to applications directly

To support sign-on service for all external (non-AV) partners and volunteers, Azure Active Directory (Azure AD) business-to-business (B2B) collaboration can be used that will let AV securely share platform applications and services with guest users from any other organization, while maintaining control over corporate data. Diagram below depicts basic B2B collaboration. A simple invitation and redemption process lets partners use their own credentials to access AV's company's resources. Developers can use Azure AD business-to-business APIs to customize the invitation process or write applications like self-service sign-up portals.



3. Our Proposed Solution

3.4. Non-functional Requirements

3.4.6. Data (Data Sovereignty)

Microsoft Azure is an ever-expanding set of cloud services to help your organisation meet your business challenges. It's the freedom to build, manage and deploy applications on a massive, global network using your favourite tools and frameworks.

- 70+ - compliance offerings – the largest portfolio in the industry
- 54 - global Azure regions – more than any cloud provider
- 95% of Fortune 500 companies trust their business on the Microsoft Cloud

Microsoft leads the industry in establishing clear security and privacy requirements and then consistently meeting these requirements. Azure meets a broad set of international and industry-specific compliance standards, such as General Data Protection Regulation (GDPR), ISO 27001, HIPAA, FedRAMP, SOC 1 and SOC 2, as well as country-specific standards, including Australia IRAP

In Australia, Microsoft operates four (4x) geographically distributed locations across the country, designed for both high availability and disaster resilience

The Predictive Analytics Platform will support and comply with all the data to be stored, processed and accessed through the platform will reside in Australia. The platform will use Microsoft Azure data centres located solely in the Australian region.

3. Our Proposed Solution

3.4. Non-functional Requirements

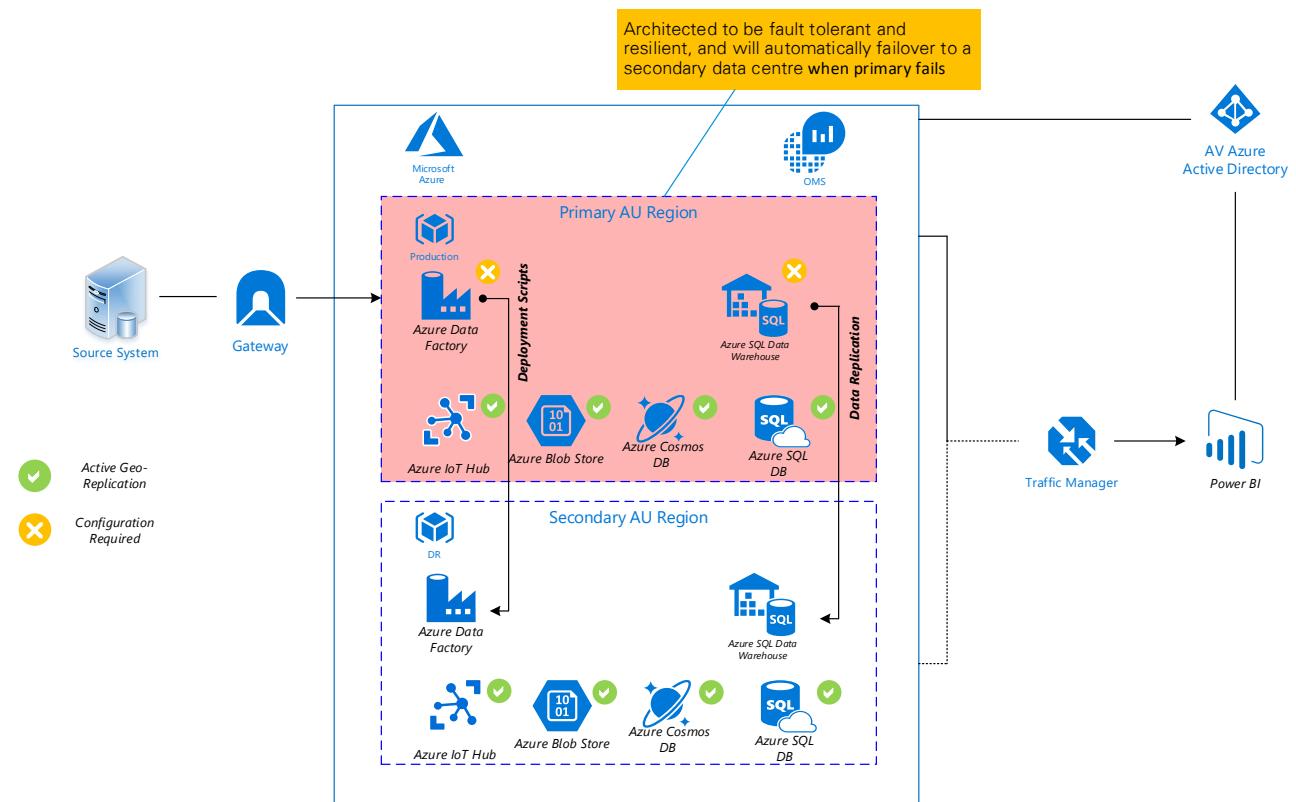
3.4.7. Disaster Recovery

The Predictive Analytics Platform for AV has been designed to be resilient and enable continuity of services in the event of a data centre outage via automatic failover.

The system has been architected to be fault tolerant and resilient and will automatically failover to a secondary data centre in the event of an outage to the primary data centre. As part of production handover testing, KPMG will test and demonstrate this metric can be achieved.

The disaster recovery architecture below depicts Disaster Recovery (DR) resource group set up which will be focused on recovering from a catastrophic loss of application functionality. For example, if a Primary Azure AU region hosting the platform becomes unavailable, there is an automatic fail-over to the Secondary Azure AU region automatically for running the operations or accessing data in another region.

Resiliency and high availability strategies are intended to handle temporary failure conditions. Executing this plan involves people, processes, and supporting applications that allow the system to continue functioning. KPMG will work together with AV to solidify these further



3. Our Proposed Solution

3.4. Non-functional Requirements

3.4.8. Hardware and Software

Given our “cloud-first” strategy, KPMG’s proposed solution will not require hardware procurement. The solution will be hosted purely in Azure Cloud, in an Australian region to meet separate data sovereignty requirement. KPMG will ensure that the underlying compute and storage resources are configured to a sufficient level to warrant non-functional performance requirement are met i.e. performance.

Separate environments within the tenancy will be created to cater for development, testing & productionising of build code. The respective environments will be separated by resource groups within the Azure tenancy. Separate disaster recover environment will be created for redundancy. We will determine & set standards for DevOps & co-ordinate with other suppliers.

Part of development lifecycle, we anticipate that production data will be copied into UAT environment to ensure relevant, most recent & accurate data is available for testing & sign off before deployment into production.

3.4.9. Integration

KPMG will use Azure Cloud as the foundation for the Predictive Analytics Platform. Azure Active Directory will be used to meet single sign-on and identity management capabilities across all components.

The solution will leverage AV’s ESB & any & all integrations platforms, treating them as respective sources. Azure Functions will support integration via Microservices architecture. Azure Data Factory and Informatica PowerCenter will be used for data import/export/integration and workflow orchestration.

To support 2x way integration with AV’s systems & databases, KPMG will reference standard techniques, including software application API’s, in software engineering to ensure application interoperability, and document and catalogue all connected interfaces.

KPMG will work with AV to document Memorandum of Understanding (MoU) before it is agreed upon and authorised by both AV and the external agencies, and comply with enterprise, state & federal requirements.

3.4.10. Maintenance and Supportability

KPMG will adhere to strict coding & developments practices & standards. Common programming languages like SQL, Python, R, Node.js will be used and supported by Azure Cloud offering. Skills for these common programming languages are readily available in the market place. With longevity and supportability in mind, the platform will use best practice and common standards that are easily transferrable and adoptable by internal resources. Metadata driven software engineering may be used where possible to minimize code changes. The project will use Azure DevOps & Version control via GitHub & Team Foundation services to deliver best in class SDLC. The proposed architecture also follows N-Tier architectural style principles that segregates logical functions & respective physical components to minimise impact & load balance as & where required.

Azure computing is always on & accessible and is subject to the Service Level Agreement (SLA) describes Microsoft's commitments for uptime and connectivity. In addition, the solution will adhere to the managed services agreement offered by KPMG as part of this tender response.

3. Our Proposed Solution

3.4. Non-functional Requirements

3.4.11. Performance

The Predictive Analytics Platform will use Azure Networking Services to support network availability, bandwidth and latency.

Performance benchmarks are dependent on multiple factors including:

- The type and bandwidth of connectivity being used to access the service.
- Quality of Services (QoS) configuration enabled on the clients' network to prioritise traffic accessing the service,
- Proximity of the end user to the geographic location that the solution is deployed or data resides
- Delivery of the service via a Content Delivery Network (CDN),
- The size and specification of the resources allocated to deliver the solution or
- The specification of the device accessing the service.

Microsoft has over 42 data centres across the world which the solution can be deployed into and multiple options to provide shared or dedicated connectivity, however achieving identical performance benchmarks from multiple geographic locations can be cost prohibitive.

KPMG will work with AV to determine acceptable performance benchmarks, any prioritised geographic locations (2x AU regions), appetite for cost vs. performance, proximity of users to data and connectivity requirements. These inputs will be used to define an appropriate solution to meet the agreed performance requirements particularly around Affinity Groups, Load Balancing and Traffic Management.

Solution will be dependent on existing network & telecommunications infrastructure & service level agreements. Azure offering has the means to cater for restricted bandwidth environments that said, bandwidth might be saturated subject to number of users in a regional area, i.e. demand, in which case infrastructure requirements need to be revisited. KPMG can & will identify potential bandwidth issues as part of its testing strategy.

Advantage of using Azure Cloud, there are means to ramp up computational power, i.e. elastic computing, as required, ensuring constant high performance is met.

3.4.12. Reliability

The solution will harness the use of Azure Operations Management Suite. Log Analytics will be configured to capture detailed logging information relating to Azure Services. By default access to logging information is restricted to users in the Security Admin, Security Reader or Global admins roles. Retention of logs is configurable and can be set to meet AV's security and audit requirements.

Azure Activity Log and log files collected through Azure Operational Management Suite (OMS) can be accessed via the following mechanisms:

- Viewed via the Azure Portal
- Emailed to designated mailing addresses
- Integrated into 3rd Party log management tools via Webhooks or the Azure API
- Stored and locked in to an azure storage account
- Accessed with PowerShell or the Azure Command Line Interface (CLI)
- Integrated into Azure Event Hubs for Power BI analysis
- Viewed and analysed with OMS Log Analytics.

By default access to logging information is restricted to users in the Security Admin, Security Reader or Global admins roles however custom roles can be defined to meet Flight Centre requirements.

KPMG will work with AV' to determine the appropriate logging requirements for the solution.



3. Our Proposed Solution

3.4. Non-functional Requirements

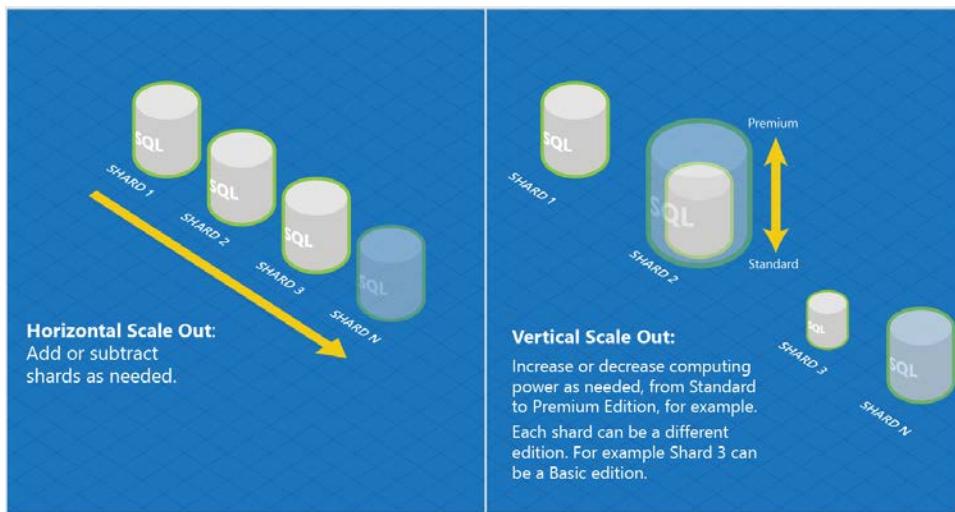
3.4.13. Scalability

Azure Cloud platform is highly configurable, scalable, resilient and adaptable platform that can be easily managed via Azure Portal or PowerShell deployment scripts.

Predictive Analytics Platform for AV will be built using Azure components that are highly available, hyper scale cloud platform is offering services that can be configured to support operational needs.

The expansion and contraction of scalability can be auto-scaled. Azure auto scaling is the process of dynamically allocating resources to match performance requirements. As the volume of work grows, an application may need additional resources to maintain the desired performance levels and satisfy service-level agreements (SLAs). As demand slackens and the additional resources are no longer needed, they can be de-allocated to minimize costs.

Auto scaling takes advantage of the elasticity of cloud-hosted environments while easing management overhead. It reduces the need for an operator to continually monitor the performance of a system and make decisions about adding or removing resources. Microsoft Azure also support automatic horizontal scaling



Predictive Analytics Platform for AV will be built on Azure Cloud which is based on the Azure Cloud Services consisting of over 100+ modular resources that can be easily on-boarded/created on demand via the Azure Portal in an agile and modular fashion.

Each Azure service is designed to be independent and offering integration points via API, Web Services, Service Bus or PowerShell.

3. Our Proposed Solution

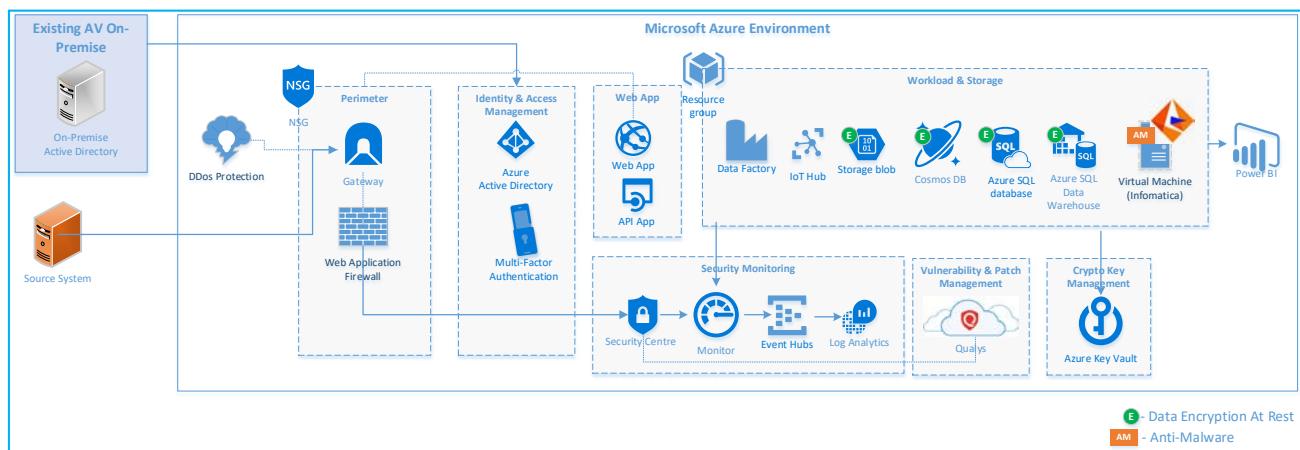
3.4. Non-functional Requirements

3.4.14. Security and Privacy (Network Security and Architecture)

Predictive Analytics Platform design for AV will leverage Azure's security product offering to help protect business assets while reducing costs and complexity. The platform will make benefit of strong, out of the box security features offered by Azure platform including encryption of data at rest and data in motion, automated threat detection, role based access control, secure network management. Built-in security controls and intelligence will help easily identify and respond to threats and security gaps, so AV can rapidly improve their security posture. By shifting responsibilities to Azure, AV can get more security coverage—which enables to move security resources and budget to other business priorities

The security architecture below depicts the key azure security services and controls incorporated into the solution at a high level. These services provide the security capabilities in the following areas

- Identity & Access Management to manage identities and control access to resources
- Data protection (at rest & in transit) to preserve confidentiality and integrity of data
- Network, System Infrastructure security to provide access control around high risk part of the network
- Application security to protect the application from application based attacks
- Vulnerability & Patch Management to identity and manage security vulnerabilities
- Logging and monitoring of security events to detect potential security breach
- End point security to maintain the operational integrity of virtual machines



3. Our Proposed Solution

3.4. Non-functional Requirements

3.4.14. Security and Privacy (Network Security and Architecture) (con't)		
Capability	Technology	Description
Provide Identify and access management, network security, threat detection, data protection, endpoint security and event management	8.1  Blob Storage Encryption	Serivce provies encryption at rest (256 bit AES encryption) and encryption during transit (HTTPS).
	8.2  Azure SQL Storage Encryption	Service provide encryption at (transparent data encryption) encryption during transit (HTTPS). Depending on the use case and data in a particular table, leverage Azure SQL Database Row Level Security, Database Views, ACLs within Data Lake Storage, etc.
	8.3  Azure AD Integration	Allows AD integration from Ambulance Victoria directly into Azure. Should be primary mechanism of enforcing Role Based Access Control and creating/syncing users, groups, and identity management – which flows to all other Azure services.
	8.4  Azure AD RBAC	Role Based Access Controls are industry standard technique for Identity and Access Management.
	8.5  Azure Logging	Activity logs and diagnostic logs should be enabled. Activity logs record the administrator activities performed on the resource such as create, update and delete. Diagnostic logs record the internal operation logs of the resource such as pipeline runs in Azure Data Factory.

3. Our Proposed Solution

3.4. Non-functional Requirements

3.4.15. Standard Operating Equipment

The solution will be operable on the AV Standard Operating Environment as it will be designed to be compatible with all desktop, laptop and mobile devices. The solution will be configured to be browser agnostic as all common desktop operating browsers including MS Internet Explorer, Firefox, Safari and Google Chrome are built using Javascript and render HTML5 webpages. Furthermore, KPMG's Single Pane Of Glass demonstrations have been tested on Google Chrome. The responsive design and configuration of the solution will enable it to be accessible on all major mobile and tablet operating systems and browsers that use Safari, Android browsers and iOS.

3.4.16. Usability

By leveraging prior knowledge and experience with AV, KPMG can design the solution according to the skills and preferences of the relevant end-user and conduct user research and user acceptance testing. KPMG already have an existing product, KPMG's Single Pane Of Glass, and a Microsoft Azure solution that addresses the core requirements for AV and this has previously been deployed at other State departments. The solution will develop a feature that provides Administrators the ability to upload manuals for read access, as well as, incorporating colour schemes in the platform to include the AV logo and corporate layout. All major web browsers natively provide spell check support and this would carry over to the web-based solution. AV specific terminology can be incorporated by cross-referencing against an in-built AV dictionary, with the solution configured to provide text and formatting functionality. The solution, being web-based, will be consistent across devices where mobile devices access the same content as the web app. All reports and data entry fields will conform to AV terminology with mandatory and optional fields set and only invalid data needing to be re-entered. Workflow functionality based on the user profile will be provided to simplify navigation with best practices used to define the Graphical User Interface of the solution.

3.4.17. Volume

Predictive Analytics Platform will use a number of Azure cloud technologies that offers a comprehensive set of big-data solutions that help you gather, store, process, analyse and visualise data of any variety, volume or velocity, to discover new opportunities and take quick action.

KPMG's proposed big data style architecture is designed to handle the ingestion, processing, and analysis of data that is large in volume and too complex for traditional database systems.

The proposed architecture will

- Store and process data in volumes too large for a traditional database.
- Transform unstructured data for analysis and reporting.
- Capture, process, and analyse unbounded streams of data in real time, or with low latency.
- Use Azure Machine Learning or Microsoft Cognitive Services.

Each and every component selected within our technology stack can cater for large volumes of data at rest, including:

- Azure Blob Storage (500 TB),
- Azure Data Warehouse (Unlimited),
- Azure SQL Database (Managed Instance up-to 8TB). The service can also support 1,600 concurrent users on the premium service tier for SQL database.
- Azure Cosmos DB (no limit to the total amount of data that a container can store in Azure Cosmos DB)

Furthermore, our solution offers vertical & horizontal scalability on demand, and automatically in some instances, scale out whilst complying with the N-Tier architectural style. Our choice of technology stack is tried & proven with Microsoft and Informatica components, market leaders in Big Data platforms, integration, ingestion and Master Data Management.

4. Engagement Model and Delivery Approach

Be sure to check out our **interactive** proposal microsite:

Visit: <https://ambulance.gateway.kpmg.com.au>

Password: #ambos4life



Lessons learned from our time with you

To be agile: Pilot first	Start simple. Follow Agile principles and focus on useful, ready to deploy increments – go end-to-end, and contain breadth of scope to succeed within each Sprint.
Showcase early & often	Better and quicker approach to achieving clarity of the requirements that are embedded into Epics and User Stories.
To iterate, means being ready to refactor code	Don't doggedly continue design choices that aren't working. Commence with a holistic design concept, but build to the current situation. Setbacks encountered during build may require code to be refactored to account for a new understanding of technical design & approach.
Extend Non-functionals into each pane (don't ignore)	Engage with the right stakeholder communities to gather complete requirements. Educate stakeholders on non-functionals and integrate these into design. Whilst many NFR's will originate from the platform, others will be solution specific.
Build a Product backlog, and revisit it	Don't let an incomplete Product Backlog impede Sprint 0+1 – but allow time to revisit the backlog and to document a complete Product vision. Do effort estimation for all backlog items.
Design for a Production Support Model	Integrate Production Support planning into Sprint delivery. Solutions must be supportable in a sustainment setting.
Communicate the Scrum Team's definition of done	Help the Product Owner to manage internal & external expectations, and to guide the Development Team's priorities. Help the Development Team to understand requirements and provide effort estimates (including for appropriate QA/QC).
Trusted users for testing and acceptance	Agree who will do testing, when. Ensure that test resources are capable and equipped for identifying development issues – including across non-functionals. Tie all test cases back to Epics & User Stories to avoid scope ambiguity.
Crystallise & reuse developer knowledge	Do not reinvent AV's existing understanding of data, systems & processes. Reuse reference and master data from Business Sources, Systems of Record & external sources.
Collaborate with AV	Bring Ambulance Vic's people into the Development Team to remove key person dependency and facilitate knowledge transfer.
Publish Development principles & standards, then educate.	Overcome the challenges of having minimal documentation and improve consistency by training the Development Team in a set of principles and standard.

4. Engagement Model and Delivery Approach

4.1. Background and Overview

Our experience of working with AV for more than 18 months has taught us that while overall strategic objectives and plans for all major programs remain intact and are delivered, the **immediate priorities for the business is subject to change** and may often need to be prioritised. We also understand that **emerging technologies** will continue to be tested by AV, both in the field of operations (like wearable body cameras), and in the underlying ICT and Medical Research capabilities (like Artificial Intelligence and Natural Language Processing).

These crucial insights into the way that AV operates has driven the thinking behind our proposed delivery approach for the Predictive Analytics Platform. Our approach is designed to deliver tangible and accelerated outcomes to AV, and is underpinned by keeping the followed **KEY FOCUS AREAS** at its heart:

1. **“Early and regular release of value” by focusing on highly visible and easy-to-implement initiatives:** This will help your business team to build a familiarity with the new platform and achieve confidence during early stages, setting the right momentum for the program.
2. **“Control and Flexibility” of the business outcomes and spend:** Similar to the Analytics Uplift program, the “focus and pace” of the program would need to be moderated according to the changing business priorities for AV. The scope, resourcing, and spend for each phase of the project would need to be explicitly agreed with the AV team and approved by the program steering committee.
3. **“Demand-driven Flex” in the service model:** The approach should help AV to get the best out of KPMG as the primary platform provider as well as from the panel suppliers. KPMG will ‘ramp-up’ and ‘ramp-down’ the team to meet business demand. An approach AV is familiar from the Analytics Uplift Program.
4. **“Minimise disruption” to business and technology teams:** As AV embarks on this journey, new technologies will be introduced to your ICT ecosystem. You will also implement your first major cloud based platform. This represents a significant change for your technology footprint. KPMG’s approach will ensure that the right operating model (DEV OPS) is set to minimize the impact on AV’s business and ICT teams, while creating a plan to up-skill existing staff during execution.
5. **“Maximize Collaboration” across AVs major programs:** The Predictive Analytics Program will run in parallel with several other programs of work, each having multiple interfaces, overlays, and interdependencies. The operating model should help to manage interdependencies, minimize inefficiencies, and maximize collaboration / innovation across all your major programs.
6. **“Agile Delivery” approach** would be used to ensure that the program team is focused on delivering based on the principle tenet of “*service what is essential / deliver what is value*”. This has been at the heart of our approach for the Analytics Uplift Program and we will continue to deliver on this promise to AV.
7. **This is a technology implementation, but “not a technology project”:** While a majority of delivery work for the engagement would be technical in nature, business engagement would be critical. You won’t have to explain data structures, business landscape, technology applications, and most importantly, the cultural aspects of AV to the KPMG team. We will ensure that the new platform does not become a “technology black-box”.



The **KPMG engagement model** has been tailored for AV and is based on:

1. Establishing a formal **Business Engagement and Demand Management Team** to ensure business alignment and oversight of the delivery process using the agile approach;
2. Establishing a **Core Delivery Team (DevOps)** to deliver the core scope of the engagement, including the Predictive analytics platform, the SPOG user-stories and the MDM solution.
3. Facilitating a **demand-driven (flex) service delivery** to accelerate the deployment of “base scope” or additional items as the program progresses. This on-demand, flex capability will operate similar to the Panel Supplier however it will deal with discretionary re-prioritisation of core delivery.
4. Involving the **AV Steering Committee and the Working Group** for the Predictive Analytics (similar to the Analytics uplift program) with executive sponsorship to direct the priorities and decisions over the life of the engagement; and

KPMG is fully committed to the above focus areas and the engagement model, and will work closely with AV during the **“collaborative dialogue process”** to discuss our overall solution, technology stack and engagement model to ensure that AV is getting the best of KPMG from the very onset of the program.

4. Engagement Model and Delivery Approach

4.2. The Engagement Model

4.2.1. Overview of our proposed Engagement Model

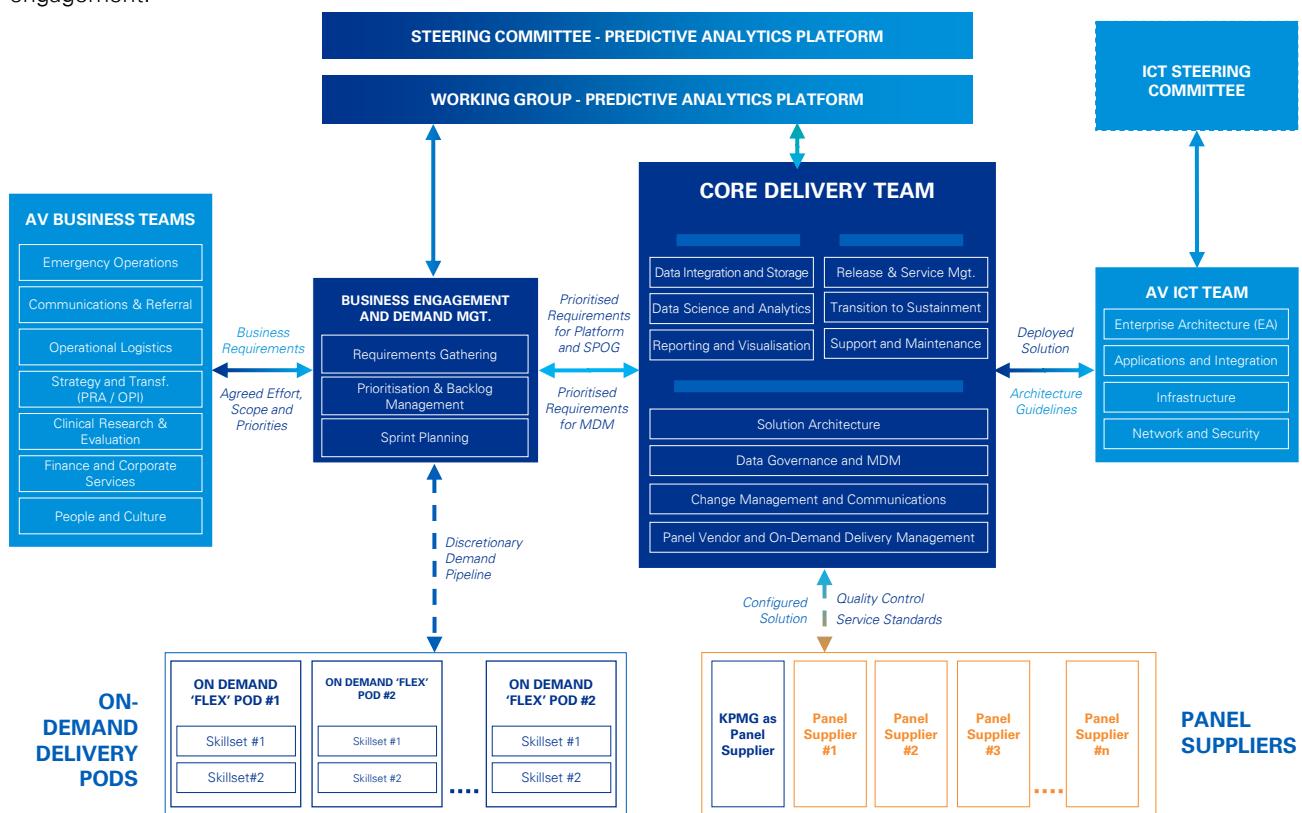
As AV is getting prepared to deploy a cutting-edge cloud analytics platform with the focus on rapid release of value for the business, it is paramount that the size and composition of the service and engagement model can be tailored to be responsive and agile over the life of the engagement. Our **tailored engagement model aims to:**

- Ensure that KPMG team's (and Panel Suppliers') activities and delivery is **always aligned to Ambulance Victoria's business objectives** through a mechanism that is business-priority led and that allows for transparency and oversight of service operations at all times;
- Provide a service that gives Ambulance Victoria **tangible and measurable value for money** through a combination of core and on-demand specialist services;
- Establishing an appropriate degree of **demand-driven "flex" in our service model** to ensure that, at all times, Ambulance Victoria have the ability to re-prioritise initiatives and only pay for what is needed; and
- Ensure that we **establish, operate and support** the "Next-Gen Predictive Analytics Platform" smoothly, including the deployment of the additional capabilities by the Panel Suppliers, transition of existing BI & analytics capabilities (existing data warehouse and OBIEE reporting) and integration of data from Finance and other Corporate functions.

We understand that the responsibilities of the Primary Platform Supplier would cover the establishment of the Predictive Analytics Platform, the delivery of SPOG user-stories and the Master Data Management (MDM) solution. We will establish a variably resourced **Core Delivery Team** across the initial 3-year timeframe.

However, from our experience of running similar programs of work, it is likely that there will be occasions, through business reprioritisation, where there is a period of increased information, reporting and/or insight demand beyond the capacity that the core delivery team is slated to deliver. Working through the **Business Engagement and Demand Management** process, our engagement model will allow for additional **discretionary "flex" pods** to be mobilised to deliver on requirements that exceed the delivery capacity (or the scope) of the core delivery team on an as-needs basis.

The diagram below illustrates the proposed Engagement Model and eco-system that we plan to establish for this engagement.



4. Engagement Model and Delivery Approach

4.2. The Engagement Model

The rationale for our proposed delivery model is two-fold:

- 1.** It allows Ambulance Victoria to **optimise the use of a core delivery team** that will be focused on the delivery of the Predictive Analytics platform, the SPOG user-stories and the MDM solution, while ensuring that there is an effective mechanism to sustainably **manage spikes in demand** beyond day-to-day throughput expectations.



- 2.** It will provide a way for Ambulance Victoria to efficiently **plan and deliver against complex requirements** (and strategic projects) while not compromising the **service quality** of the existing delivery capability that the core team will support.

On this basis, and to **strike the right balance of focus across multiple capabilities** required for the delivery of the Predictive Analytics Platform, our proposed Engagement Model is structured into 3 key segments:

- **Business Engagement & Demand Management Team**
- **Core Delivery Team**
- **On Demand (Flex) delivery Pods** (including Panel Suppliers)

as detailed in the following sections.

4.2.2 Business Engagement & Demand Management Team

In order to provide successful Service and Technology delivery, it is essential to ensure there is a robust mechanism for **Business Engagement, Business Advisory, Demand and Pipeline Management**. This key capability has been included as an integral part of our proposed engagement and delivery model.

Demand Management is a **planning and sustainment function** that we will use to gather, forecast, plan for and manage the data and analytics requirements and information requests from the Ambulance Victoria's business units and subsequently aligning these collective work requirements to the capacity of the delivery teams and the technology platform.

A **Pipeline / Backlog** is generated with gated approvals, where our teams can pull work from a prioritised and approved queue. This is not a stand-alone function; we recommend the need for an Ambulance Victoria **Steering Committee** with business stakeholder representation, and a program level **Working Group** to be established within Ambulance Victoria. The Working Group will oversee governance aspects from demand management, in-flight developments, right through to outcomes delivery and solution acceptance.

The Business Engagement and Demand Management team would be **led by Anuj Solanki (KPMG's Engagement Director)**, who will work closely with AV Program Director, Project Manager and the business teams to deliver the following **key capabilities**:

1. BUSINESS REQUIREMENTS GATHERING:

The proposed Predictive Analytics Platform is intended to be a "**a platform for all, within and beyond AV**", it needs to be "truly enterprise", as well as provide opportunities for data sharing with external partners. Coordinating the capture of business requirements from various business functions, and engaging external parties effectively would be one of the most critical roles on this engagement.

Gerald Barclay (**Demand Manager**), supported by Jakob Govendir (**AV Business Process Specialist**) will lead this function and involve other KPMG team members and SME as required to build a balanced view of priorities across Emergency Operations, Communications & Referral, Operational Logistics, Strategy and Transf. (PRA / OPI), Clinical Research & Evaluation, People and Culture, Finance, ESTA, Hospitals and other partners in the ecosystem. Both Gerard and Jakob have been extensively involved with AV over the past 18 months and have an intimate understanding of your business process, data, technologies and team cultures.

We have set up an effective process to capture business requirements during the Analytics Uplift program; we do this by breaking down complex problems into manageable chunks, and creating joint teams from KPMG and AV to work in an agile manner for rapid delivery of tangible outcomes. We will continue to use this approach during this engagement.

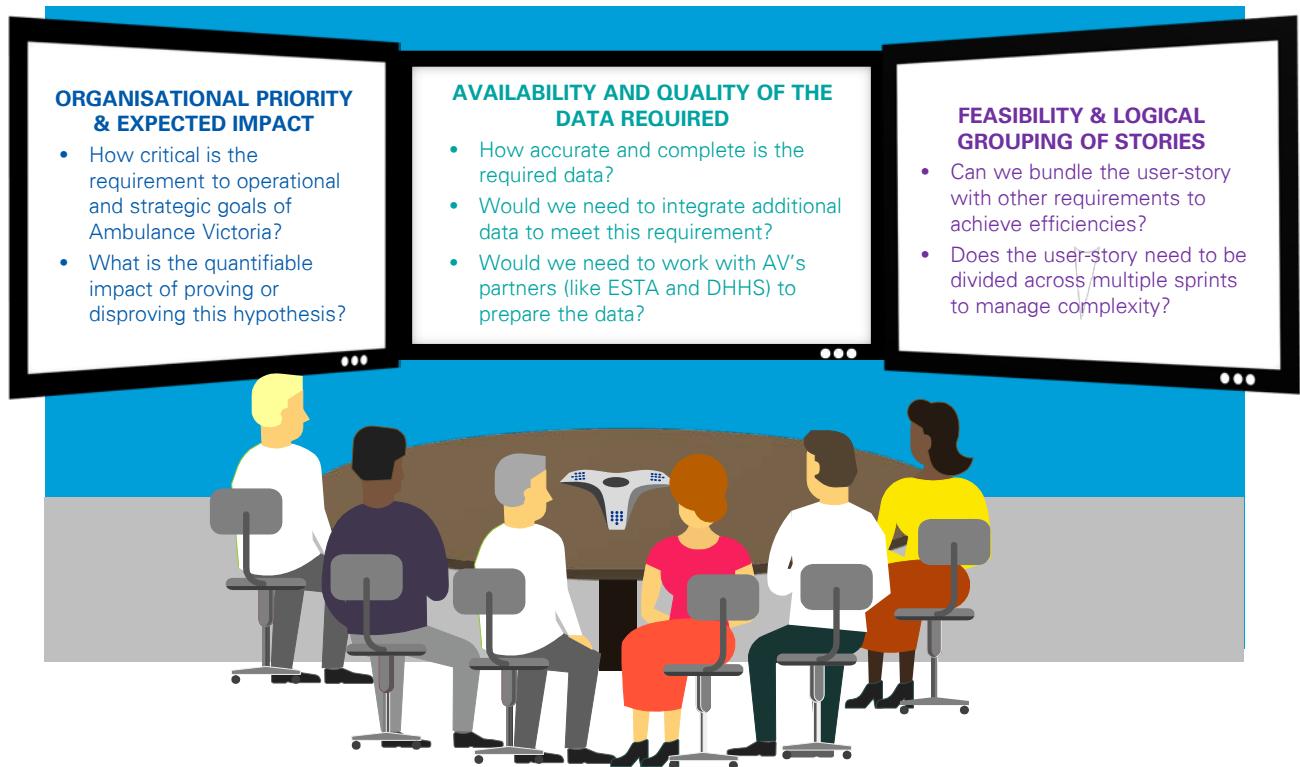
4. Engagement Model and Delivery Approach

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2. PRIORITYISATION AND BACKLOG MANAGEMENT:

Business requirements gathered would then need to be prioritised to develop a business requirement demand pipeline. We propose a **Kanban Model for Demand Management** - a method for establishing and managing a pipeline of work with an emphasis on just-in-time delivery while not overloading the team members. In this approach, the process, from definition of a task to its delivery to the customer, is transparent for participants to see.

We will agree with AV on the **guiding principles for prioritisation of business requirements**. Based on our experience of running similar programs, we will use the following principles to agree on the priorities and effort required to deliver specific business requirements (user-stories):



While delivering the Analytics Uplift program, KPMG has introduced the Agile Methodology to AV, where we followed a development method that is adaptive and flexible to changing requirements. Ambulance Victoria's 'Scrum' approach to agile uses team collaboration to complete within short time-boxed iterations called 'Sprints'. Prioritisation and Backlog management component of our proposed engagement model represents the first stages of the agile approach as illustrated below. Refer to the next section for more details on our Agile approach for AV.



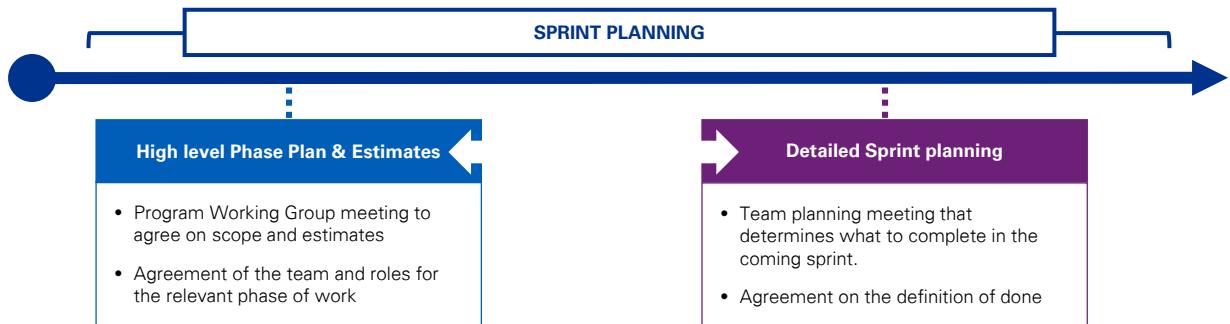
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3. SPRINT PLANNING:

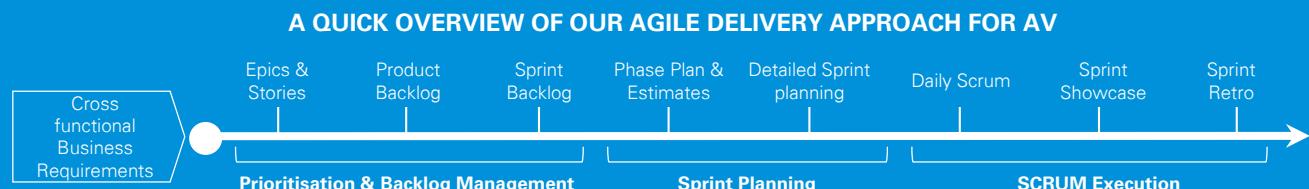
The heart of a scrum is a sprint that revolves around the delivery of a useable increment of the final product. Sprints have consistent durations throughout the development effort – a new sprint starts immediately after the conclusion of the previous sprint. Each Sprint has a goal of what is to be built, a design and flexible plan that will guide building it, the work, and the resulting product increment.

The sprint planning process for the prosed engagement will be led by [Gerald Barclay \(Demand Manager\)](#) and supported by [Lachlan Hardisty \(Scrum Master\)](#). The process is divided into two key stages as illustrated below:



The **High Level Phase Plan & Estimates** help to agree on the team and effort required to deliver prioritised requirements **for each phase of the project**. The funding to deliver the bundle of work agreed for the phase is then released by the Working and the Steering Group(s). The high level phase plans have to be reviewed in conjunction with project backlog to determine the feasibility of the end product given the specified time frame.

The approved High level Phase Plan & Estimates are then taken to the next stage of planning referred to as **Detailed Sprint Planning** where the scope may be clarified and re-negotiated between the Product Owner and Development Team as more is learned. This stage of sprint planning focuses on breaking down the tasks, roles and efforts **for individual sprint**, and multiple sprints may run in parallel.



Key Definitions

- Epic:** An epic is a large user story that cannot be delivered as defined within a single iteration or is large enough that it can be split into smaller user stories.
- Story:** Stories are short, simple descriptions of a feature told from the perspective of the person who desires the new capability, usually a user or customer of the system.
- Product Backlog:** A product backlog is a list of the new features, changes to existing features, bug fixes, infrastructure changes or other activities that a team may deliver to achieve an outcome.
- Sprint Backlog:** The sprint backlog is a list of tasks identified by the Scrum team to be completed during the Scrum sprint.
- Daily Scrum:** Each day at the same time, the team meets so as to bring everyone up to date on the information that is vital for coordination: each team members briefly describes any "completed" contributions and any obstacles that stand in their way.
- Showcase:** The showcase, also known as iteration (or sprint review in Scrum), is intentionally a very informal meeting that typically takes the form of a demonstration of the completed features to the business Subject Matter Expert (SME) or Product Owner.
- Sprint Retro:** The sprint retrospective is an opportunity for the Scrum Team to inspect itself and create a plan for improvements to be enacted during the next sprint.

Agile Scrum Roles

Scrum Master: Manage the scrum team & help external party interaction with the team <ul style="list-style-type: none">Manage project goal, scope and end productPrioritising tasks that are critical to successful project deliveryProvide technical advise to the development teamRun scrum events	Development Team: Deliver the tasks required in producing a successful outcome at the end of each sprint <ul style="list-style-type: none">Self organizingNo formal titles are allotted, regardless of the work performed by the individualAccountability belongs to the development team as a whole
Product Owner: Responsible for maximizing the value of the product resulting from work of the Development Team <ul style="list-style-type: none">Defines the sprint goalParticipates in scrum meetingsOrdering the items in the Product Backlog based on criticality to product delivery... more responsibilities	Customer: Ultimate end user of the final product <ul style="list-style-type: none">Accepts the rules and roles that scrum offers.Work closely with the product owner to ensure end-product is consistent with project expectationsAssist with product backlog grooming and attending sprint reviews

4. Engagement Model and Delivery Approach

4.2. The Engagement Model

4.2.3 The Core Delivery Team

The central platform services will be delivered by the core team comprising of experienced **multi-skilled technology professionals** and analytical modellers that have delivery expertise across the entire platform and development lifecycle.

It is essential that the initial platform build phase completes with a robust “baseline” of data and high-impact user-stories from division across AV. Therefore this will persist as a high-priority scoping and planning focus area for the Business Engagement and Demand Management team at the initial stage of the program.

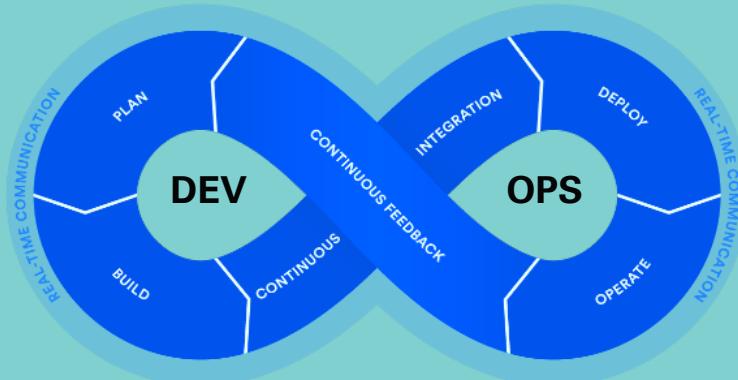
The Core Delivery Team will be **variably resourced** across the initial **3-year timeframe** to support the broad (and maturing) priorities for delivery of the Predictive Analytics platform, the SPOG user-stories and the MDM solution for AV.

As an example, the resourcing for the initial Core Team will be focussed on ensuring that there are the right mix of skills to **start with the core platform development, architecture, data ingestion, reporting and insights capability** for the initial user-stories. Subsequently, once the platform has been “baselined” (in the context of data availability and reporting/insight service fulfilment), the profile of the function will **shift to a mature Dev/Ops model** that services AV to the agreed SLAs.

We understand that the move from “on-premise and in-house” approach to a “cloud-first and outsourced” approach represents a **paradigm shift for your ICT team**. KPMG will adopt the **DevOps approach** for the delivery of the predictive analytics platform instead of the more traditional application lifecycle management (ALM) process have been used by AV’s ICT team in the past.

DevOps brings together people, processes and technology, automating software delivery to provide **continuous value to your users**. With Azure DevOps solutions, we will be able to deliver software faster and more reliably. Our solution delivery approach (DevOps) will focus on the following **key outcomes** for AV:

1. Faster delivery of outcomes
2. Continuous feedback Loop
3. More stable operating environments
4. Reduced rework and lengthy ICT deployment routines
5. Improved communication and collaboration
6. More time to innovate (rather than fix/maintain)



While we will work closely with the ICT team at AV for the adoption of the DevOps culture, we are cognizant that this represents a **new way of working** for the AV team. We will work closely with the ICT leadership team to help shift the culture from command and control of ICT environment to a more collaborative approach that promotes autonomous teams and a high degree of trust within and outside the ICT team. We have successfully demonstrated a similar shift in culture and operating model during the Analytics uplift program for AV.

The Core Team is responsible for establishment, delivery and support of the Predictive Analytics Platform, the SPOG user-stories and the MDM solution. The core team is also responsible for the support and maintenance of the platform and is divided into three core functions:

- **Development team**
- **Operations team**
- **Common Capabilities**

as detailed in the following sections.

Resourcing for each of the 3 functions in the core delivery team can be **ramped up or down** depending on the business demand and prioritisations.

4. Engagement Model and Delivery Approach

4.2. The Engagement Model

1. DEVELOPMENT TEAM:

KPMG's core development team working on the engagement would be multidisciplinary to meet a wide range of capabilities expected for the Predictive Analytics Program. In essence, this team would be responsible to deliver the following key outcomes:

- Data Integration and Ingestion:** to develop new data pipelines to ingest and transform the data into the Predictive Analytics Platform. [Leo Kozhushnik](#) (Director for Solution Architecture and Integration), will lead this team supported by [Praveen Thirukonda](#) (Integration and Storage Lead).
- Data Storage and Database Management:** to maintain the single-repository of data within the predictive analytics platform.
- Data Science and Advanced Analytics:** to apply advance techniques for predictive modelling and complex problem resolution. [Mark Geels](#) (Director for Analytics and Data Science Delivery) will lead this team supported by [Abigail Low](#) (Data Science Lead).
- Reporting and Visualisation:** to deliver highly interactive, geospatial user interface (UI) for SPOG and other users stories as well as building management reporting and dashboards. [Chantal Suder](#) (Visualisation, Reporting and UI / UX) will lead this team.

The development team will work closely with the AV business and ICT team members using the agile methodology to deliver the prioritised requirements assigned by the Business Engagement and Demand Management team. The team will focus on useful, ready to deploy increments making the delivery process **iterative, communicative and results driven** from the on-set of the program. The SCRUM execution process for the for incremental delivery will be divided into three key stages as illustrated below:



Story Boards will become a fundamental tools for managing the SCRUM execution. For a typical sprint:

- The story board comprise of a series of cards representing different tasks of the sprint workflow that provides an effective information radiator of status and progress.
- Typically, the story wall contains columns that represents a team's workflow and the index cards represent the actual work and metadata to communicate the status.
- Card are shifted across columns as they step through from progress to completion.

Typical Ambulance Victoria Scrum Board			
To Do	In Progress	Testing	Done
Task #2	Task #3	Task #7	Task #8
Task #6	Task #4		Task #16
Task #10	Task #23	Task #12	Task #7
		Task #13	Task #35
		Task #14	

Sprint Review

- Held at the end of the Sprint to inspect the Increment and adapt the Product Backlog if needed.
- The Product Owner discusses the Product Backlog as it stands.
- The entire group collaborates on what to do next, so that the Sprint Review provides valuable input to subsequent Sprint Planning

Sprint Retrospective

- Opportunity for the Scrum Team to self-reflect and create a plan for improvements to be executed during the next Sprint.
- Inspect how the last Sprint went with regards to people, relationships, process, and tools
- Identify and order the major items that went well and potential improvements
- Create a plan for implementing improvements to the way the Scrum Team does its work in future sprints.

4. Engagement Model and Delivery Approach

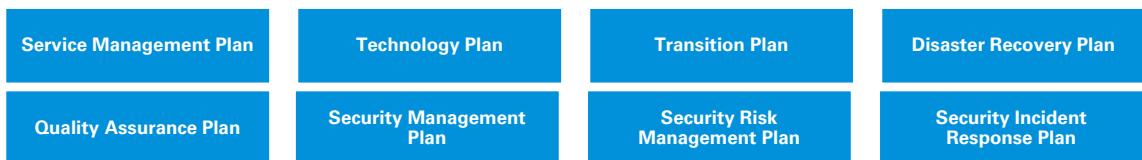
4.2. The Engagement Model

2. OPERATIONS TEAM:

KPMG's operations team would be focused on managing the **application lifecycle** and **release management** using a continuous delivery approach to **build, deploy, and promote** the build for the predictive Analytics platform. The operations team will also ensure that functionality built has **automated functional tests** that are used by the continuous delivery process to determine successful deployment and operation of applications. The operations team will also act as the **second level support** for applications, triaging issues, and disseminating them to the platform provider (Microsoft and Informatica), core development team or other teams as necessary.

The Operations team would be responsible to deliver the following key outcomes:

1. **Release and Service Management** to ensure continuous delivery of capabilities for the predictive analytics platform is performed while adhering to the service standards set by AV. This will also involve the final acceptance testing (with business users involved) for the newly developed functionality.
2. **Transition to Sustainment** To ensure that the Predictive Analytics Platform is sustainable as early as possible. To do this the operations team will work closely with the AV team to develop and implement the following key plans and standards:



3. **Support and Maintenance** to provide the second line of support for in-depth technical support issues related to the Predictive Analytics Platform and to work on the problem resolution and respond to the service requests and change requests from Ambulance Victoria for all issues raised as per the agreed SLAs (*refer to Section 4.4 "Support and Maintenance" of this document*)

3. OTHER (SHARED) CAPABILITIES:

KPMG's Development team and operations Team (DevOps) would also be supported by our other (common) teams working throughout the program. These teams will **provide specialised services/skills at the relevant stages of the project** and will be managed by a respective capability leads, eventually managed by the Engagement Director.

We envision that the following common capabilities will be required to support the "Business Engagement and Demand Management" and the "DevOps" teams:

Solution Architecture Team:

The solution architecture team will focus on deploying a "**Scalable and Adaptable**" architecture for rapid delivery of tangible outcomes to AV and also to promote innovation and **bring the best of emerging technologies** to AV. **Krishna Nadimpalli (Architecture Lead)** would lead this capability.

The team will start with setting up the right architectural foundations early in the program. This will require that the technology stack is kept simple and flexible. Similarly, the data needs to be managed to address all possible scenarios as the project progresses. The illustration below represents a summary of key focus areas for the Architecture team:

CORE RESPONSIBILITIES:

- ✓ Functional Architecture and capabilities required
- ✓ Technical Architecture (Azure and Informatica)
- ✓ Environments Architecture (Dev, Test, Prod)
- ✓ Network Security and Privacy
- ✓ Infrastructure Readiness for Azure Platform
- ✓ Data Architecture and Data Sovereignty
- ✓ Architecture for the MDM Solution
- ✓ Patterns within Technical Architecture

NON FUNCTIONAL SPECIFICATIONS:

- ✓ Accessibility
- ✓ Availability
- ✓ Compatibility
- ✓ Performance
- ✓ Reliability
- ✓ Scalability
- ✓ Archival and Backup
- ✓ Disaster Recovery

More details on the proposed solution architecture for the predictive analytics platform have been provided in Section 3.2 "Solution Architecture" of this document.

4. Engagement Model and Delivery Approach

4.2. The Engagement Model

4.2.4 On Demand 'Flex' Delivery Pods

As part of its regular consultation with the business and management of the business requirement demand pipeline, it may become apparent that the **volume of demand exceeds the core team's capacity** to deliver in a timely or responsive manner.

For periods where business demand for information, reporting and business insights increases beyond the capacity that the core team can deliver, our engagement model allows us to mobilise additional discretionary "flex" pods to delivery on an as needed basis. In such an event, the Demand Management function and the business may jointly agree to mobilise an "**on-demand, flex pod**" of specialised skills to address these requirements. There would be an expectation that any "on-demand, flex" pod works in close alignment with the core team to ensure that technology change is properly managed and delivered in adherence to platform standards and established development patterns.

Three different types of "on-demand flex pods" can be initiated during the program, as illustrated below:

#	Type of On-Demand, Flex Delivery Pod	Rational for Activation	Who will deliver?	Contractual Impacts
1	Delivery acceleration of "in-scope" user-stories for SPOG or MDM solution	To augment the capacity for the KPMG Core Delivery team (Platform Supplier) for accelerated delivery against prioritised business requirements. This option will help to sustainably manage spikes in demand beyond day-to-day throughput expectations.	KPMG "Flex Pool" of SMEs, Technical Resources	No Impact on contract as this does not change the scope of work
2	Delivery of additional requirements through KPMG as the Platform Supplier	To Augment the capacity for the KPMG Core Delivery team (Platform Supplier) to deliver against complex requirements (and strategic projects) that have not been scoped earlier, but will make sense to be delivered by the Platform Supplier, while not compromising the service quality of the existing delivery capability that the core team will support.	KPMG "Flex Pool" of SMEs, Technical Resources	Change request to reflect the additional scope of work for KPMG
3	Delivery of additional requirements through Panel Suppliers	To spin-up new capabilities for the delivery of "other user-stories" and new features on the Predictive analytics platform. The panel vendor will work with AV and KPMG's core DevOps team to build, test and deploy these capabilities.	Panel Suppliers (including KPMG as a panel supplier)	New Statement of Work (SOW) for the Panel Supplier.

The on-demand flex delivery Pods will be supported by the "KPMG pool of resources" and Panel suppliers; and based on our understanding of AV requirements, the skillset of the team members within the core team as well as the flex pool of resources should be aligned to the following "**skills that matter**" for the delivery of Predictive Analytics Platform:

CORE Delivery Team – Skills that Matter

Functional Consulting:

- Business Requirements Elicitation
- User Storyboarding for Analytics
- Business Process Optimisation
- Sector Specific Experience

Architecture:

- Cloud Analytics Architecture
- Enterprise Architecture
- Data Architecture and Modelling
- Network and Security Architecture

Data ingestion and Storage:

- Data Engineering
- Data Integration and Transformation
- Data Lake and Data Warehousing
- Database Management

Advanced Analytics:

- Data Science

- Machine Learning and AI
- Statistical Analysis

Data Delivery:

- Management Dashboards
- Data Visualisation
- High-Res, Custom Visualisations

Data Management:

- Master Data Management
- Data Governance
- Data Quality Management

Others:

- Quality Assurance and Testing
- Support and defect Management
- Culture and Change Management
- Agile Project Delivery
- Microsoft Azure stack

'Flex' Delivery Pods – Skills that matter

Data ingestion and Storage:

- Data Engineering
- Data Integration and Transformation
- Data Lake and Data Warehousing
- Database Management

Advanced Analytics:

- Data Science
- Machine Learning and AI
- Statistical Analysis

Data Delivery:

- Management Dashboards
- Data Visualisation
- High-Res, Custom Visualisations

Others:

- Quality Assurance and Testing
- Agile Project Delivery
- Microsoft Azure stack

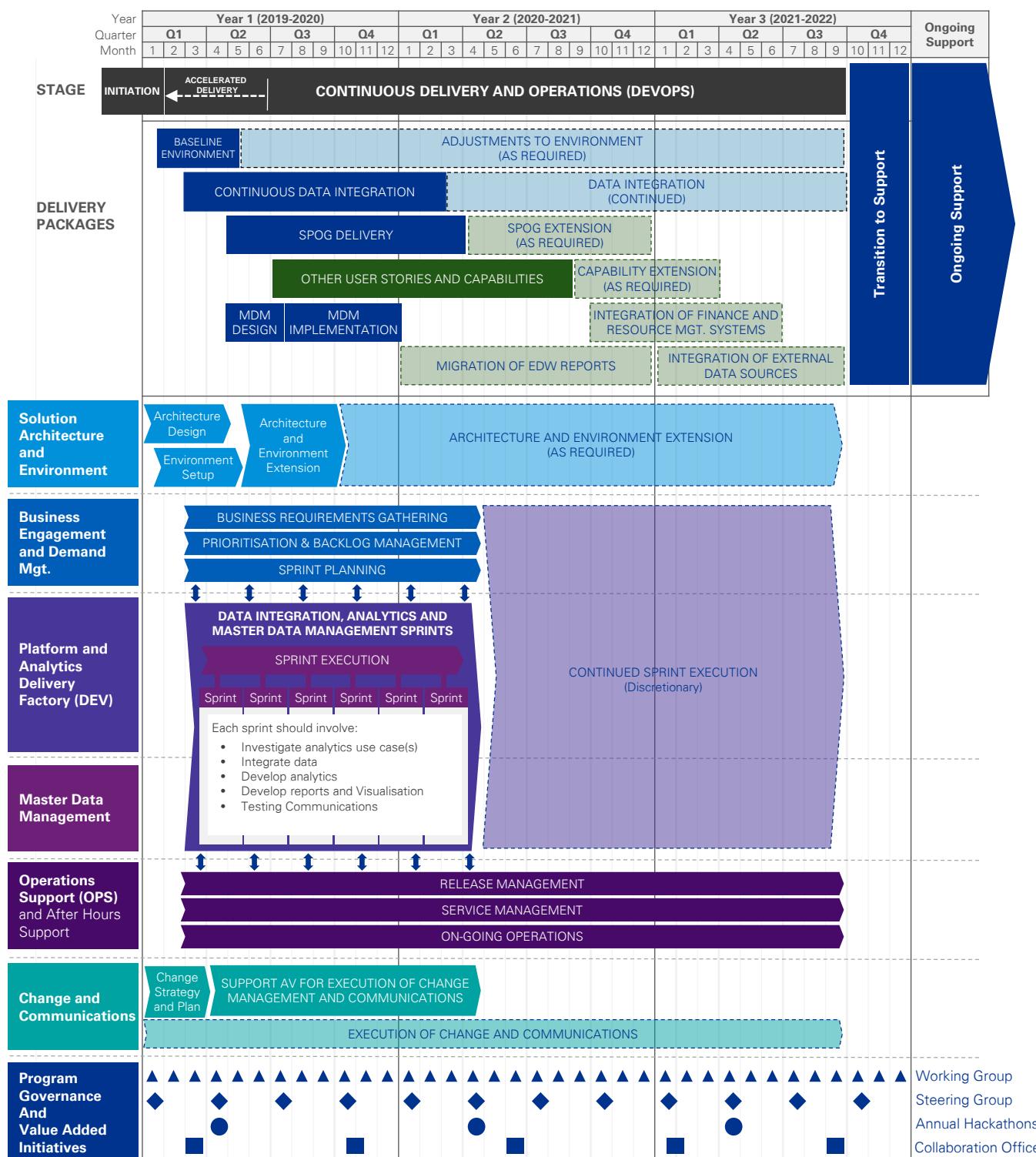
4. Engagement Model and Delivery Approach

4.3. Proposed Timelines

Over the next 3 years, the proposed timeline to deliver the analytics platform, the SPOG user stories and the MDM solution has been illustrated below. Included are the key decision points and forums to manage the program. We are open and keen to ensure that we discuss potential revisions and adjustments to the timing, sequencing and resourcing of these schedules with Ambulance Victoria if we are chosen as the platform provider.

LEGEND

	Core Scope for Platform Supplier
	Scope for Panel Suppliers
	Additional Scope for Flex teams
	Additional for Platform or Panel Supplier



4. Our Delivery Approach

4.4. Support and Maintenance

4.4.1. Annual Maintenance Services (AMS) For The Predictive Analytics Platform

4.4.1.1. Overview

KPMG will provide applications maintenance services, including technical advice and assistance to ensure continuity, availability and accessibility of the production systems. The objective is to provide application maintenance and support services for the Predictive Analytics Platform, during warranty period and the system software maintenance contract period (if awarded).

During this period, the KPMG team will be responsible for some support activities, will assist the Ambulance Victoria or its Infrastructure vendor for some support activities, and will not be responsible (not providing any assistance) for some support activities that are to be taken up by the Infrastructure vendor directly. The services falling under each of these categories are detailed in the next few pages. The scope of support and maintenance is listed in this section of our proposal.

Onsite support for the AV Predictive Analytics Platform will be provided during business hours (typically 0830 hours – 1730 hours) via the KPMG Dev/Ops team located within AV premises. All after-hours support will be delivered via KPMG's Managed Services and Support Centre located in Rhodes, NSW. This Centre has been established to provide KPMG clients with support for all of their managed platforms as well as maintenance of our KPMG-as-a-Service solutions.

The offsite after-hours support centre will be printer-less, allow no personal electronic devices, workstations will have no external device connectivity, entry to the area will be dual key entry and other proprietary security measures will be implemented including the requirement for all assigned support staff to pass all the necessary security and background checks.

We will work closely with AV to ensure all of the integration points required for support are established as part of our initial mobilisation prior to the deployment of the first user story outputs. This will include all of the service management, ticketing and AV Level 1 help desk integration that will be required to support AV staff on an afterhours basis.

4.4.1.2. Definitions

In the context of this proposal, the following terms have the meanings as defined below:

- 1. Level 1 (Primary) Support:** This is the single point of contact for the user and the first line of support. Ambulance Victoria will be responsible and will respond to the user through the existing support process and systems, and as per the SLAs defined for their current application support process. It is expected that the Level 1 support is managed by Ambulance Victoria, and will assign any unresolved Predictive Analytics Platform related issues to the Level 2 support.
- 2. Level 2 (Secondary) Support:** KPMG will provide the second line of support for in-depth technical support issues related to the Predictive Analytics Platform and will work on the problem resolution and respond to the service requests and change requests from Ambulance Victoria for all issues raised as per the SLAs described below.
- 3. Level 3 (Tertiary) Support:** KPMG will provide the third line of support for difficult or advanced technical support issues related to the Predictive Analytics Platform and will work on the problem resolution and respond to the service requests and change requests from Ambulance Victoria for all issues raised as per the SLAs described below.
- 4. Hotline:** A dedicated support phone number (one primary and one secondary), and a dedicated support account (email) will be configured for all communication for support issues.
- 5. Service Request:** A formal request from a user for something to be provided – for example, a request for information or advice; to reset a password; or to install a workstation for a new user. Service requests will be managed by the request fulfilment process, in conjunction with the existing support procedures and help desk of Ambulance Victoria.

4. Our Delivery Approach

4.4. Support and Maintenance

6. **Change Request:** A formal proposal for a change to be made to the application. It includes details of the proposed change like enhancement requirements, data requirements, new interface requirements, etc. Such changes to the system, new components etc. will be considered outside the scope of the current support. KPMG will propose man-day effort and based on agreed man-day rates stated in our proposal, cost estimates of such services to the Ambulance Victoria to be agreed and delivered under a separate work-order called Change Request. A change request will have to go through an approval process before processing. Change requests will also be managed by the request fulfilment process, in conjunction with the existing support procedures and help desk of Ambulance Victoria.
7. **Ambulance Victoria Help desk:** The single point of contact between all the service providers and the users. Ambulance Victoria will liaise with the HW / Network / 3rd party SW vendors for support. The users will continue to use any existing ticketing systems to submit and monitor requests.
8. **Support Hours:** The times or hours when support is available to the users.
9. **System Downtime:** The period of time during the Operating Hours of the System where the System is not operating in accordance with the specifications except for occasions where the failure is due to factors for which Ambulance Victoria is responsible and shall not include the downtime after the Operating Hours.
10. **Operating Hours:** The scheduled operating hours of the System which will be from 24 hours from Monday to Sunday including Public Holidays.

11. **System Availability Level:** shall be determined according to the following formula:

[Standard Usage Hours – Downtime Aggregate Hours] x 100%. / [Standard Usage Hours]

Based on the definitions and understanding established above, the services to be provided by KPMG team during the "System Warranty" period and, if awarded, the contract period of the "System Maintenance and Support" are divided into the following three categories:

1. **In Scope:** Where KPMG team will have the "primary responsibility" to deliver the solution to the requirement.
2. **Assistance Services:** Where the primary responsibility to deliver the solution lies with Ambulance Victoria or its appointed Facilities Management Vendor or a 3rd Party. KPMG team will provide "assistance" to the primary vendor as detailed in this proposal.
3. **Not in Scope:** Where KPMG team will not be involved. The activity is managed in its entirety by Ambulance Victoria or an appointed vendor.

4.4.1.3. In Scope

The "In – scope" application maintenance services provided by KPMG team shall include the following activities as they apply to our proposed solution delivered by KPMG team:

1. **Application Maintenance Services for the Predictive Analytics Platform, this covers:**
 - a. Provide corrective maintenance, troubleshoot and isolate defects, including diagnosis and correction of all latent errors in the applications.
 - b. Investigate and correct defects in the applications within the service levels.
 - c. Assess impact of new releases of system software to the applications.
 - d. Provide advice, guidance and refresher training annual (if required) to Ambulance Victoria in the use of applications.
 - e. Implement and enhance operational procedures as and when needed.
 - f. Produce and update technical and user documentation for the applications.
 - g. Monitor the applications to ensure data integrity and efficient system performance and provide expert advice on applications performance monitoring and tuning.
 - h. Ensure that all program source codes and executable codes are properly maintained (especially the versioning) and backed up.
 - i. Manage and implement changes to the applications such as to minimise impact on system availability.

4. Our Delivery Approach

4.4. Support and Maintenance

- j. Provide applications briefings to users as mutually agreed.
- k. Propose improvements to the current work processes and procedures, which may result in faster turn-around time and increased efficiency in delivering the services.
- l. Make the necessary repairs and adjustments to the System to restore the System to its original working order within the Problem Resolution Time.
- m. Provide support to address enquiries from the Ambulance Victoria's Helpdesk through the KPMG telephone Hotline or electronic mail.
- n. For any software upgrades to the System, to test application and make sure that the System still meets the requirements, through Change request.

2. Level 2&3 Support– Problem Management, this covers:

- a. Analyse the problems encountered and propose actions to prevent these problems from re-occurring, and pre-empt similar problems from occurring.
- b. Covered during Performance Guarantee Period, Warranty and Annual Maintenance Support (if awarded).
- c. Advise Ambulance Victoria on software and hardware problems related to the Predictive Analytics Platform.
- d. Work with application vendors on any product related issue resolution.
- e. On Ambulance Victoria Approval, design, develop, test and implement the changes to the proposed System according to the requirements of the change requests (CR).
- f. Provide a mechanism to monitor all reported defects and problems to ensure Service Levels are met.
- g. Provide an excel based Problem Management/ Support log hosted on a shared platform to enable the Ambulance Victoria staff to log, update and track the status of the problems and major support activities.

3. Change Request Scope, this covers the following activities, subject to the requests coming through the Change Request process:

- a. Prepare technical feasibility proposal including impact analysis, when requested by the Ambulance Victoria, for new systems or enhancements to existing applications.
- b. Assess the change requests and submit a quotation to Ambulance Victoria for approval.
- c. Design, programming and testing work to modify the Application Software in order to meet requirements of the Change Request
- d. Prepare/ update the changes and maintain the System
- e. Prepare/ update relevant documentation to reflect changes made to the System.
- f. Train the Ambulance Victoria users on the changes.
- g. Follow the service levels for Change requests as required by the Ambulance Victoria:

Classification of Change Request	Estimated Effort for Change Request	Completion Time (from the day the request is approved to the day the request is completed)
Minor	Change Request that require < 1 man day or < = 3 man days to complete	Subject to mutually agreed deadlines
Medium	Change Request that require > 3 man days or < = 7 man days to complete	Subject to mutually agreed deadlines
Major	Change Request that require > 7 man days to complete	Subject to mutually agreed deadlines

4. Our Delivery Approach

4.4. Support and Maintenance

For avoidance of doubt on Service Request and Change Request, we have included a detailed list of activities covered within the scope of our Application Maintenance Services support engagement as follow:

Task/Function	Type of service
Troubleshoot (Identify & Resolve) Errors/Issues with the Data Warehouse and Microsoft Azure applications(s)	Service Request
Troubleshoot (Identify & Resolve) Errors/Issues with ETL scripts, rules, sequences, calculations and load procedures	Service Request
Troubleshoot (Identify & Resolve) Errors/Issues with Dashboards and Reports (Security, Formulae, Formats and Layouts)	Service Request
Installation, testing and implementation of standard corrections, updates, supply and installations of new versions and new releases of the application software	Service Request
Provide support and assistance to internal and external auditors	Service Request
L2 Support – Assist & Support Business users with the use of applications in accordance with business processes	Service Request
Address problems with failures during updates and application refreshes	Service Request
Log and manage enhancement / change requests from users	Service Request
Distinguish between functional and technical issues	Service Request
Provide Remedial Support during support hours and emergency services outside support hours, as specified in tender requirements	Service Request
Maintain application functional documentation	Service Request
Provide training for personnel in the use of application software, twice yearly	Service Request
Design and implement new enhancements based on business needs for the application. Enhancement include (not a comprehensive list):	
1. New reports/dashboards or extensive changes to existing reports/dashboards 2. New ETL scripts to integrate additional data or additional transformation rules 3. Structural Changes to the Data Warehouse and Microsoft Azure design. 4. New scripts for aggregations, analytical modelling or new calculated columns 5. New Analytical reports or extensive changes to the existing reports	Change Request
Documentation updates on training materials and operating guides and manuals for new enhancement	Change Request
Provide product expertise during assessment and design activities for Application	Change Request
Adjustments and re-designs to dimensions including new attributes and new hierarchies within existing dimensions	Change Request
Supplying and installing new product updates and releases of the application software, within 4 calendar weeks of receipt of the Ambulance Victoria's request	Change Request

4. Our Delivery Approach

4.4. Support and Maintenance

4.4.1.4. Assistance Services

The “Assistance Services” in Application maintenance services provided by KPMG team shall include the following activities where we will only provide assistance services to Ambulance Victoria or Ambulance Victoria’s Infrastructure vendor related to our propose solution and delivered by KPMG team.

1. Backup, Data Services and Security Support

- a. Assist Ambulance Victoria’s Facility Management vendor(s) to recover lost data, restore and repair damaged data and correct erroneous data to the extent possible.
- b. Work with Ambulance Victoria’s facilities management vendor to provide back-up and recovery services and procedures for the applications and data.
- c. Provide support for any system security review and audit activities and implement follow-up actions recommended by auditors to maintain the security of the applications.

2. Other Assistance

- a. Provide consultancy services on the applications maintained by KPMG.
- b. Assist the Ambulance Victoria’s Facility Management vendor(s) with network preparation or issue resolution for issues that may impact the Predictive Analytics Platform.
- c. While performing updates, assisting the Facility Management vendor(s) to ensure the updates do not affect other systems hosted within the hosting environment.
- d. Assist FM team in re – location requirements - in case the application software is moved from one location to another, provided that Ambulance Victoria has given at least 30 days notice informing us of this relocation activity.

4. Our Delivery Approach

4.4. Support and Maintenance

4.4.1.5. Not In Scope

The “Not in Scope” application maintenance services provided by KPMG team shall includes the following, and any other activities not mentioned above:

- a. Schedule and ensure successful completion of ad-hoc, daily, weekly, monthly and other batch reporting and processing jobs in the applications.
- b. Work closely with the other Government’s Helpdesks to resolve all System problems.
- c. Level 1 helpdesk support to users.
- d. Manage Applications (Copy, delete, etc.)
- e. Maintain administrative control over system access & security.
- f. Maintain Administrative control over access to the DEV and PROD system
- g. Manage application level security filters and settings for users, adding and removing of users and troubleshooting user specific access issues.
- h. Monitor and manage application user counts to remain in compliance with contractual license agreements
- i. Manage the movement of data as needed between scenarios based on business requirements
- j. Maintain Grids and reusable objects for dashboards and reports
- k. Maintain inventory of dashboards and reports to align with business needs
- l. Organize additional Dashboards and Reports
- m. Hardware Support
- n. Software Support
- o. Network Support
- p. Support of Interfaces to any other business applications

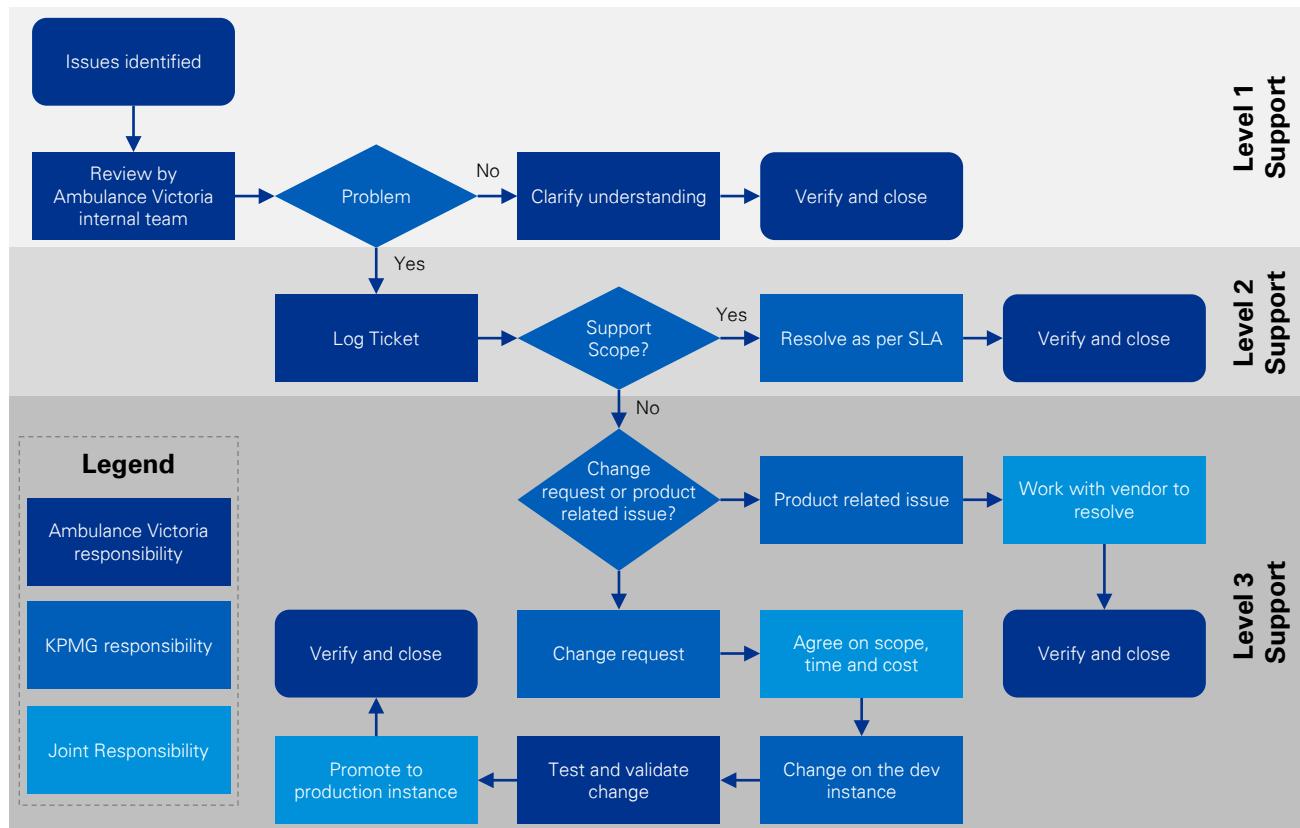
4. Our Delivery Approach

4.4. Support and Maintenance

4.4.2. Application Service Management Approach

4.4.2.1. Proposed Process Flow

Below is the proposed process flow for addressing the service requests that are generated by Ambulance Victoria users during the system warranty period and, if awarded, the contract period of the system maintenance:



- It is expected that the First Level Help desk, is managed by Ambulance Victoria, and will assign any unresolved Predictive Analytics Platform related issues to the right Level 2 Category.
- Level 2 Support team will be an off-site support team that will receive service requests from the Ambulance Victoria support either via email support or phone support (hotline), and will work to create knowledge base for the recurring support tickets.
- Level 2 Support team will assess and assign unresolved issues to the Right Level 3 Category.
- Support team will assign the support ticket to external parties, in the event that the issue is not related to Predictive Analytics Platform configuration, and any time taken by other parties is not considered under our team SLA.
- A dedicated support account (email) will be configured for all communication for support issues.
- A support issue log and tracking report (monthly) will be provided to track the support activities.
- The support services will be provided on an on-site basis by our Dev / Ops team during business hours (0830 hours – 1730 hours) on all business days and on an off-site basis from KPMG's Managed Services and Support Centre for all other times between Monday to Sunday.

4. Our Delivery Approach

4.4. Support and Maintenance

- Issues logged with the support account (email) will be responded within 4 working hours.
- Ambulance Victoria will provide project consultants with a working environment during the period that they are required to be on-site.
- Service Level Agreement (issue resolution time) based on the critical levels of the issues is as follows:
 - Priority 1: Acknowledgement and updating time 30 minutes; Resolution time within 4 hours
 - Incident effects All sites, the data centre, or multiple operations centres OR service is unusable and operations severely impacts
 - Priority 2: Acknowledgement and updating time 1 hour; Resolution time within 8 hours
 - Incident effects a single operations centre or business centre OR service display major faults although work can progress
 - Priority 3: Acknowledgement and updating time 1 business day; Resolution time within 3 business days
 - Incident effects a branch site or region OR service has slightly degraded performance
 - Priority 4: Acknowledgement and updating time 3 business days; Resolution time within 5 business days
 - Incident effects a single user OR service has non-critical errors/bugs that do no impact on normal operations

4.4.2.2. Change Request Approach

The approach diagram above also defines the procedure for change request:

- Any change request arising out of a problem or a new requirement will be logged into the issue tracking sheet (described on the next page).
- KPMG support team will evaluate the change request to propose scope, time and cost of the change. KPMG will also inform the Ambulance Victoria about any other impact of the change on the application.
- Ambulance Victoria change approval process to approve the change request and agree on scope, time and cost.
- KPMG support team will prepare the environment, develop the change on development environment, test and then implement the change on production.
- Users will perform testing and validation of the change.
- KPMG team will assist the Ambulance Victoria facility management vendor in any related infrastructure services and configuration management services required to manage the change.

4.4.2.3. Problem Management System/ Log

All problems/ defects/ changes will be tracked using the AV Service Management System, enabling users to be able to log new requests or to view status of their existing requests.

4. Our Delivery Approach

4.4. Support and Maintenance

- **Maintenance Log:** All maintenance activities will be tracked using a log, which will include the following information:
 - date and time KPMG is notified of any defect or malfunction;
 - date and time of arrival of KPMG's personnel at the Site;
 - item or part of the Application Software subject to investigation;
 - total time the Application Software or part thereof is made unavailable to Ambulance Victoria;
 - description of defect(s), including cause(s);
 - corrective action taken, including temporary corrections, bypasses, etc.;
 - preventive action to be taken; and
 - tests performed and results.

4.4.2.4. Support Hours

As per the requirements specified by Ambulance Victoria, The support services will be provided on an on-site basis by our Dev / Ops team during business hours (0830 hours – 1730 hours) on all business days and on an off-site basis from KPMG's Managed Services and Support Centre for all other times between Monday to Sunday.

4.4.2.5. Escalation Process

KPMG will ensure that an experienced team of technical and product specialists are provided to support Ambulance Victoria. If a support team member cannot make progress on your issue, he/she will request assistance from any member of this team. In order to maintain consistency, the Support Engagement Director will usually remain your point of contact throughout the support process.

If you feel that the support process is not working appropriately for your issue, or you have any other support-related feedback, please contact the Support Engagement Director, or the Engagement Partner, who also sits on the Steering Committee.

Our goal is to resolve all escalated issues at the Support Engagement Director level. For that Director will:

- Receive and log the escalation request.
- Mark the service request as escalated in the tracking system.
- Provide and execute an action plan for resolution.
- Provide agreed upon updates until closure.

For problem under Severity 1, KPMG shall inform Ambulance Victoria immediately through the Ambulance Victoria's escalation procedure and shall brief Ambulance Victoria on the causes, area of impact and lead-time for recovery within 30 minutes.

4. Our Delivery Approach

4.4. Support and Maintenance

4.4.2.6. Responsibilities of Ambulance Victoria

- In order to assist us in the efficient and effective conduct of the support engagement, we will require the co-operation from Ambulance Victoria to allow us access to the relevant information and technology platforms as soon as possible and on our request from time to time. You must immediately bring to our attention any item that might have any bearing on this assignment so that we can consider its relevance.
- Ambulance Victoria will be responsible for assistance activities defined earlier, as well as infrastructure preparation activities including, OS patching, maintenance of servers, maintenance of databases, scheduled backups and maintenance of hardware/network/infrastructure components required for the Predictive Analytics Platform.
- Ambulance Victoria shall ensure that proper environmental conditions are maintained for the Application Software and shall maintain in good condition the accommodation of the Hardware, the cables and fitting associated therewith and the electricity supply thereto
- Ambulance Victoria shall not make any modification to the Application Software without KPMG's prior written consent except for;
 - modifications made in accordance with or pursuant to documentation provided by KPMG;
 - modifications to the Application Software to enable it to meet the Requirement Specifications or such additional requirements as may be agreed between Ambulance Victoria and KPMG;
 - configuration of the Application Software;
 - installation of approved or types of Application Software; or
 - installation of software or types of software which the System is intended to work with.
- Ambulance Victoria shall operate the Application Software in a prudent manner in accordance with the Standard Instructions of the manufacturers of the System or the advice of KPMG;
- Ambulance Victoria shall not attempt to adjust, repair or maintain the Application Software nor request, permit or authorise any person other than KPMG or persons approved by KPMG to carry out adjustments, repair or maintenance to the Application Software; and
- Ambulance Victoria shall use only current release of the Application Software that is available and shall not alter, modify or copy the Application Software except with the permission of KPMG.
- Ambulance Victoria shall be responsible for all Hardware Support responsibilities
- Ambulance Victoria shall be responsible for all Software Support responsibilities
- Ambulance Victoria shall be responsible for all Network Support responsibilities
- Ambulance Victoria shall be responsible for the support of Interfaces from or to the Predictive Analytics Platform to and from any other business applications

4. Our Delivery Approach

4.4. Support and Maintenance

4.4.3 Other Considerations And Assumptions

- The “Response Time” shall begin from the time or date the problem is communicated to the by Ambulance Victoria to KPMG Support Hotline. The message may be communicated by Ambulance Victoria L1 Helpdesk team or Ambulance Victoria’s appointed Representative responsible for the System concerned, through telephone or email.
- The “Response Time” period end time is defined as the time when a response is provided by KPMG for the problem via telephone or electronic mail to the person who reports the problem.
- The “Problem Resolution Time” shall begin upon communication of the problem to the KPMG support hotline, The “Problem Resolution Time” ends when the problem is resolved and the defect is restored to a satisfactorily working condition.
- Target System Availability Level during the period covered by Maintenance Contract is minimum 95% for each calendar month or part thereof.
- If the support team is not able to remedy the defect or error, the team may engage the services of an independent expert, who may be an employee or representative of the product vendor, to remedy the defect or error, or to effect a temporary correction or bypass. The independent expert will work at the site as per the timelines and conditions specified by Ambulance Victoria in maintenance contract.
- The project team will comply with all conditions of contract related to unauthorised code, confidentiality, and ownership of intellectual property rights. as stated in Part 1 Section C of the tender documents.

4. Our Delivery Approach

4.5. Change and Communications

4.5.1 Leveraging the AV Change Framework

As outlined in the Section 7.2.6 “Change and Communications”, we propose to leveraging the AV Change Framework we have already developed with you, which is based upon KPMG’s global Behavioural Change Management methodology. The use of a familiar and proven approach will support more ready buy-in from leadership on the change approach and enable easier delivery of change activities.

We have mapped AV’s Change Framework against the proposed delivery model for the Predictive Analytics Platform. Referring to the Engagement Model and Delivery Approach, we believe that the Change & Communications approach needs to ensure people are engaged and supported before, during, and after each tranche of change is implemented.

This Change Framework is designed on the principles that Change & Communications:

- Need to be delivered in a systematic and planned way;
- Are designed to support achievement of overall program objectives;
- Need to be tailored to individual needs; and
- Are designed to maximise buy-in and commitment to the new Predictive Analytics Platform.

Lastly, progress should be measured across the Program to ensure the overall approach and supporting Change & Communications interventions are embedding the change into BAU. The figure on the subsequent page depicts our high level Change & Communications approach for AV.

To ensure the greatest value for money approach for AV, we propose a process by which our KPMG change experts develop the initial change and communications framework and strategy, and then work closely with nominated members of the AV team who will be responsible for tactical delivery throughout the program. In this way, your change and communications professionals also received a significant professional development opportunity, with one-to-one coaching built in to the process throughout the program.



KPMG ACTIVITIES

- Develop initial planning documentation and templates, including Change Management Strategy, Change Management Plan and Roadmap, Stakeholder Strategy, Communications Strategy & Plan;
- Develop coaching program;
- Conduct handover/up-skill session with nominated AV personnel on planned activities;
- Maintain regular contact with AV personnel to provide advice and guidance, review work, monitor change activities;
- Engage with external stakeholders where KPMG has existing relationships that may be beneficial (e.g. in DHHS, ESTA etc.) or with senior or strategic stakeholders within AV;
- Review the findings of key initiatives such as business readiness assessments, training needs analysis, pulse surveys or other assessments (along with the AV team), to determine any particular areas of risk or specific interventions that might be required to address the findings;
- Review key plans as developed to provide strategic feedback, such as go-live plans; and
- Participate in key decision and governance forums to maintain an appropriate people-focus across the project and help to identify early any rising change related risks.



AV ACTIVITIES

- Support development of initial planning documentation;
- Deliver the tactical activities outlined in the planning documentation, such as communications, change impact assessments; stakeholder engagement; training needs analysis, capability analysis, and change interventions;
- Conduct feedback and progress metric measurements;
- Lead go-live support; and
- Actively participate in coaching sessions and engaging the KPMG SMEs at appropriate points to discuss analysis outcomes and risk assessments.

4. Our Delivery Approach

4.5. Change and Communications

4.5.1 Leveraging the AV Change Framework (con't)

		Repeated for each Sprint				
Program Stage	Initiate	Design	Build	Deploy	Run	
Change Stage	Make it Clear	Make it Known	Make it Real	Make it Happen	Make it Stick	
Activities to support	<ul style="list-style-type: none"> ✓ Vision and case for change defined ✓ Change & Communications Strategy, including strategic narrative and core messages developed ✓ Program success measures identified ✓ Key leadership and impacted business area stakeholders identified ✓ Change leadership role understood at each level 	<ul style="list-style-type: none"> ✓ High level change impacts identified based on platform design & infrastructure ✓ High level Change & Communications approach for Program outlined ✓ Stakeholder Analysis ✓ Initial comms rolled out and evaluated. ✓ Strategic input and coaching of AV team 	<ul style="list-style-type: none"> ✓ Sprint level change impacts identified ✓ Training needs analysis ✓ Targeted and impactful change interventions for stakeholders (e.g. roll out plan, comms test data / system impacts) ✓ Ongoing feedback collated and actioned. ✓ Strategic input and coaching of AV team 	<ul style="list-style-type: none"> ✓ Capability gap analysis conducted based on UAT and integration ✓ Training evaluation ✓ Interventions designed for deployment (e.g. hyper-care approach) ✓ Change Plan progress reporting ✓ Ongoing feedback collated and actioned. ✓ Strategic input and coaching of AV team 	<ul style="list-style-type: none"> ✓ Reinforcement campaign (e.g. number of uses, issue resolution) ✓ Hyper-care transitioned into BAU ✓ Pulse check on previous Sprint to assess Change effectiveness ✓ Handover report ✓ Post implementation review ✓ All Change interventions embedded in BAU. ✓ Strategic input and coaching of AV team 	
Change outcomes	<ul style="list-style-type: none"> ✓ Strategic narrative and core messages developed for Program ✓ Key leadership aligned around the aims of the Program and prepped to distil core messages 	<ul style="list-style-type: none"> ✓ AV Stakeholders understand the vision of the Program ✓ Change risks identified to inform Sprint execution 	<ul style="list-style-type: none"> ✓ Impacts of Sprint are clearly understood across teams ✓ Leaders know what action to undertake based on the rollout plan ✓ Impacted stakeholders understand what is means for their role 	<ul style="list-style-type: none"> ✓ Impacted teams guided through UAT and understand approach for go-live and where to get further support ✓ Feedback collated on interventions 	<ul style="list-style-type: none"> ✓ Capability is embedded in BAU and impacted teams know expected behaviours and actions ✓ Lessons learnt from previous Sprint embedded into next Phase 	
Ongoing Change Leadership (through Program Governance, User Groups and other forums)						
Ongoing Communication and Engagement (through Workplace, Intranet, Videos and Pulse Checks)						

5. Our People

Be sure to check out our **interactive** proposal microsite:

Visit: <https://ambulance.gateway.kpmg.com.au>

Password: #ambos4life





We work well together, because we share your values



Your Values

Being Respectful

We treat our colleagues, patients, customers and members of the community with courtesy, respect, dignity and compassion. We share responsibility for creating an environment that demonstrates equality and is free from harassment and discrimination.

Working Together

We are committed to working in a collaborative environment, seeking out the diverse knowledge and experience of others and building effective working relationships to deliver our mission.

Openly Communicating

We are committed to open, honest and transparent communication that builds trust and effective relationships, leading to better outcomes.

Being Accountable

We trust and empower each other to deliver on our commitments, take ownership for our work and are answerable for our actions.

Driving Innovation

We drive innovation by finding day to day efficiencies and improved ways of working. By using our creativity we identify and drive changes that will allow us to better serve our patients and community.

Our Values

Respect the Individual

We respect people for who they are and for their knowledge, skills and experience as individuals and team members.

Work Together

We bring out the best in each other and create strong and successful working relationships.

Improve Communities

We act as responsible corporate citizens by broadening our skills, experience and perspectives through work in our communities and protecting the environment.

Communicate Openly and Honestly

We share information, insight and advice frequently and constructively and manage tough situations with courage and candour.

Act with Integrity

We are constantly striving to uphold the highest professional standards, provide sound advice and rigorously maintain our independence.

Seek the Facts and Provide Insight

By challenging assumptions and pursuing facts, we strengthen our reputation as trusted and objective business advisors.

Lead by Example

At all levels we act in a way that exemplifies what we expect of each other and our member firms' clients.

At KPMG we see innovation as one of our core [behavioural capabilities](#). We support a safe to fail, experimentation and culture. In recognition of our fast changing world, we have invested heavily in developing our new Innovation, Digital and Data practice.

5. Our People

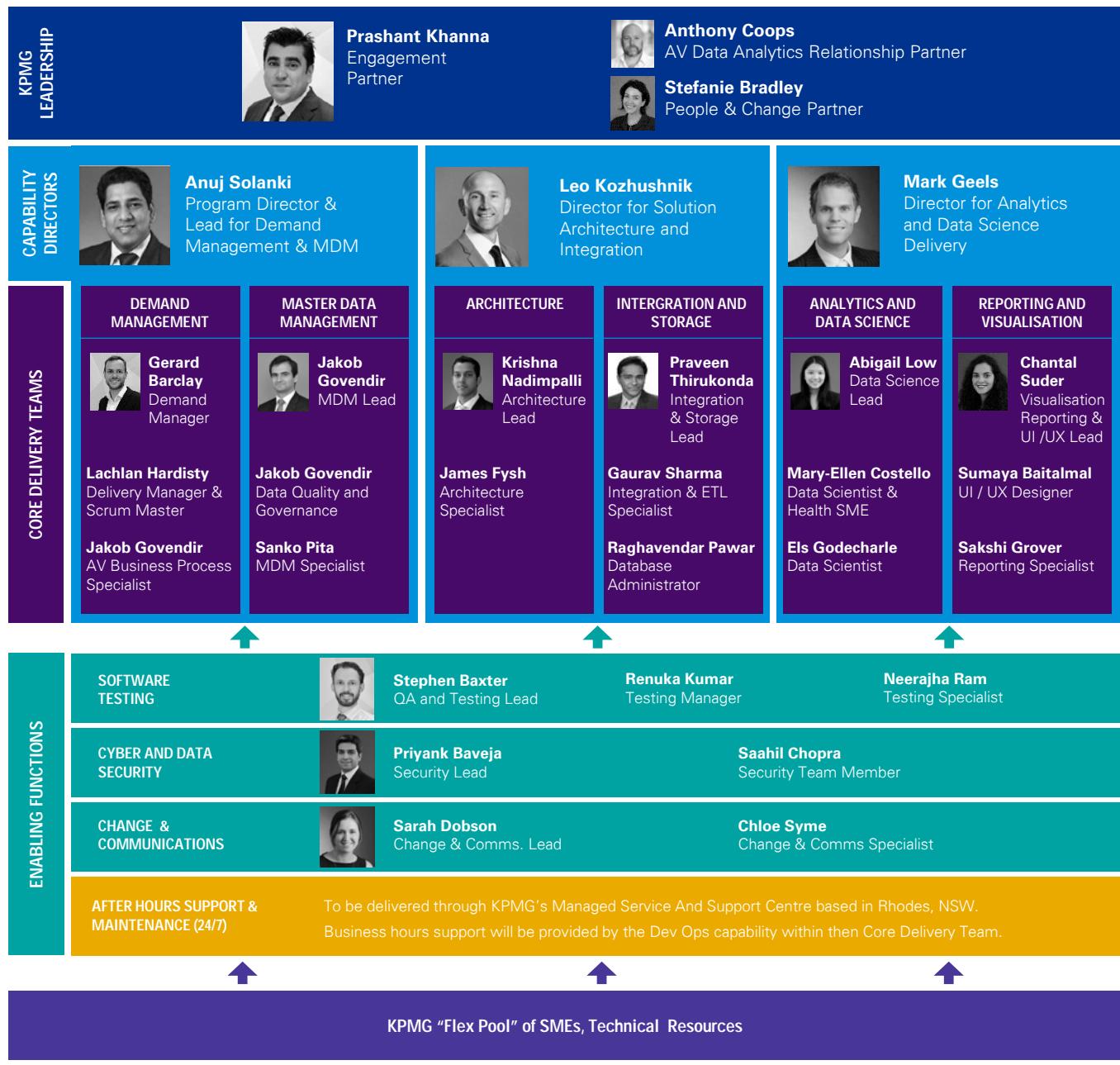
5.1. Team Structure

With us, not only will you get a primary implementation partner with deep, proven technical expertise, you will also get a committed, passionate team who understands you, your operations and your culture and is ready to go above and beyond for you to get things done, and drive the best outcomes for this project, for AV and for all Victorians.

As your D&A partner for the last two years, we know each other really well and we've seen what can be accomplished when we work shoulder to shoulder. This proven collaboration means delivering more tailored outcomes to you sooner.

We're excited to introduce our overall Engagement Partner, Prashant Khanna, KPMG's National Lead for Analytics and Information Management, who, among many other achievements led the development of DHHS's predictive child protection tool as well as the [Vic Energy Compare website](#). Supported by Anthony and Stefanie, Prashant's deep experience subject matter expertise will ensure a successful, on-time, on-budget project and with outstanding results.

Supporting our leaders is a team of experts who will provide you with continuity of seamless delivery (e.g. Anthony, Anuj, Mark, Krishna, Jakob, Gerry, Sakshi, Gaurav, Chloe) and new faces with fresh perspectives (including Prashant, as well as our Lead Architect Leo, Lead data scientist Abigail, lead cyber security expert, Priyank and lead tester Stephen).



5. Our People

5.2. Skill Mapping

We confirm that all individuals on this project have the necessary skills, capabilities and certifications as outlined in the specification requirements section 7.13.3-6 to successfully deliver this engagement.

			Sector Experience				Architecture Services						Data & Analytics				People and Change / Business Analysis / Agile / Project Management		Involved in delivery of case study			
Proposed Resource	KPMG Designation	Project role	Healthcare	Government	Emergency Services	AV Experience	Architecture	Governance and Tech standards	Future State Planning & Architecture	Stakeholder Architecture Design Ass't	Architecture Assurance	Capability Uplift	Microsoft Azure	Security	Testing	Data & Information Management	Data Engineering and Warehousing	Analytics, data visualisation and Reporting	People Change	Business Analysis / Agile / Project Management		
KPMG Leadership	Prashant Khanna	Partner	Engagement Partner	●	●	●	○	●	●	●	●	●	●	○	●	●	●	○	○	●	Swisse, DHHS, AV, AusSuper, ISPT, Chevron, DET	
	Anthony Coops	Partner	AV D&A relationship partner	●	●	●	●						○	○	○	○	○	●	○	●	AV, AusSuper	
	Stefanie Bradley	Partner	People & Change partner	●	●	●	●											●	●		StJOGod, DHHS, AV, Oil and Gas	
Capability Directors	Anuj Solanki	Director	Program Director & Lead for Demand Management & MDM	●	●	●	●	●	●	●	●	●	●	○	○	●	●	○	○	●	AV, Swisse, VicTrack, AusSuper, ISPT, Chevron	
	Leo Kozhushnik	Associate Director	Director for Solution Architecture and Integration	●	●	●		●	●	●	●	●	●	○	○	○	●	●	●	●	DHHS, DET	
	Mark Geels	Director	Director for Analytics and Data Science Delivery	●	●	●	●	●	●	○	○	○	○	○	○	○	●	●	●	●	AV, DHHS, DET	
Demand Mgmt	Gerard Barclay	Associate Director	Demand Manager	●	●	●	●	●	●	○	○	○	○	○	○	○	●	●	○	○	●	AV
	Lachlan Hardisty	Manager	Delivery Manager and Scrum Master	●	●	●		●					○	○	○	○	○	●	●	●	●	
	Jakob Govendir	Manager	MDM Lead	●	●	●	●	●	●	○	●	●	○	○	○	●	●	●	●	●	●	AV
Master data mgmt	Sanko Pita	Manager	MDM Specialist	○	●		○	○	○			●		●	●	●	●	●	●	○	●	
	Krishna Nadimpalli	Associate Director	Architecture Lead	●	●	●	●	●	●	●	●	●	●	○	●	●	●	●	●	●	●	AV
	James Fysh	Manager	Architecture Specialist	●			●	●				●	○	●	●	●	●	●	●	●	●	
Integration & Storage	Praveen Thirukonda	Associate Director	Integration and storage lead	●	●		●	●	●	●	●	●	●	○	●	●	●	●	●	●	●	
	Gaurav Sharma	Senior Consultant	Integration and ETL Specialist	●	●	●	●	●	●				●		●	●	●	●	●	●	●	AV
	Raghavendar Pawar	Senior Consultant	Database Administrator	●			●					●	●	●	●	●	●	●	●	●	●	
Analytics & data Science	Abigail Low	Manager	Data Science Lead	●	●	●	●	●	●	●	○	●	●	●	○	○	●	●	●	●	●	AV, ISPT
	Els Godecharle	Senior Consultant	Data Scientist	●	●	●	●	●	●	●	○		○	○	○	●	●	●	●	●	●	AV
	Mary-Ellen Costello	Senior Consultant	Data Scientist and Health SME	●	●	●	●	●	●	●	●	●	●	○	○	○	●	●	●	●	●	DHHS
Reporting & Visualisation	Chantal Suder	Manager	Visualisation, reporting and UI/UX Lead	●	●	○	○	○	●		●	●	●	●	●	●	●	●	●	●	●	DHHS, ISPT, DET, StJOGod
	Sumaya Baitalmal	Senior Consultant	UI / UX Designer	○							○		○	○	○	○	●	●	●	●	●	
	Sakshi Grover	Senior Consultant	Reporting Specialist	●	●	●	●	●	●			○	●	●	●	●	●	●	●	●	●	AV
Software Testing	Stephen Baxter	Associate Director	QA and Testing Lead	●								●	○	●	○	○	○	○	○	●	●	
	Renuka Kumar	Manager	Testing Manager	●								○	○	●						●	●	DET
	Neerajha Ram	Consultant	Testing Specialist	●	●		○		○			●	●	●	●	●	●	●	●	●	●	
Cyber Security	Priyank Baveja	Director	Security Lead	●	●	●	●	●	●	○	○	●	●	●	●	●	●	●	●	●	●	
	Saahil Chopra	Manager	Security Specialist	●	●	●	●	●	●	○	○	●	●	●	●	●	●	●	●	●	●	
	Sarah Dobson	Associate Director	Change & Communications Lead	●	●											●	○	○	●	●	●	
Change & Comms	Chloe Symes	Manager	Change & Communications Specialist	●	●	●	●	●					●	●	●	○	○	●	●	●	●	AV
	Plus others as required with CVs provided on request																					

- Significant experience / expertise
- Some experience / expertise

5. Our People

5.3. Role Descriptions

Below describes the key responsibilities for each of the engagement leadership roles outlined in our engagement team section above. It is also anticipated that there will be a significant role played by key stakeholders within AV and the level of required commitment will be established during the initial phases of the project to make best use of their time.

Engagement Role	Engagement Responsibility
Engagement Partner	<ul style="list-style-type: none"> Overall accountability for the engagement delivery liaising with the Program Sponsor, Program Director and relevant AV Executive (both Operations and IT) to ensure the delivery of the Program is aligned to AV's broader strategic intent at all times. Will be a key resource in any major re-prioritisation and / or significant scope change discussions. Will be responsible for ensuring that the best resources are made available to AV from a KPMG perspective on this Program and will be responsible for the overall QA of the outputs delivered.
AV Data Analytics Relationship Partner	<ul style="list-style-type: none"> Overall accountability for the broader data and analytics relationship and available to provide support, advice for executive engagement and strategic insights
People & Change Partner	<ul style="list-style-type: none"> Overall accountability for people and communications initiatives and available to provide support, advice for executive engagement and strategic insights
Program Director & Lead for Demand Management & MDM	<ul style="list-style-type: none"> Primary business engagement for all stakeholder liaison and business requirements triage, scoping, sizing and prioritisation. Responsible for Demand Management function and the overall change management process & signoff. Works closely with senior stakeholders to optimise the value the solutions is delivering Provides a point of escalation for team and overall service. Produces all Project Governance documentation, attend/chair any associated meetings, and manage the allocated budget and timeframes.
Director for Solution Architecture and Integration	<ul style="list-style-type: none"> Overall responsibility for the technical solution throughout the SDLC of each agile sprint. Along with the Demand Manager, the technical delivery manager should manage the overall scheduling & delivery of the build components and dependencies between concurrent agile sprints. Oversees all business requirements to ensure the capabilities are integrated into the solution or delivered in service and above all value is provided. Responsible for the allocation of activities within an iteration overseeing the SDLC lifecycle – including requirements, design, built, test & release. Responsible for strategic progression of the platform, and evaluating short term versus long term objectives.
Director for Analytics and Data Science Delivery	<ul style="list-style-type: none"> Manage a team of data scientists and visualisation experts and assigning schedules, and projects. Develop, implement, and disseminate metrics about quality, performance and outcomes. Collaborate with executives and other departments to identify and meet information needs. Analyse and validate findings, creating reports, presentations, and visualizations
KPMG National Health Partner SME	<ul style="list-style-type: none"> Available to the AV team to provide strategic insights around the culture and organisational change environment based on her extensive work with AV, the Department of Health and Human Services and other related organisations.

5. Our People

5.3. Role Descriptions

Engagement Role	Engagement Responsibility
Demand Manager	<ul style="list-style-type: none"> • Adjusts team resource distribution to get the right project rhythm. • Liaises with key sponsors and stakeholders whilst coordinating the team's activities • Facilitates meetings, removes obstacles and minimises the amount of distraction to the team and in some cases facilitate the inter-team communication where there are multiple teams working on the same project and across multiple sites.
MDM Lead	<ul style="list-style-type: none"> • Solution owner for the MDM ecosystem, including MDM tool, configuration, cleansing & operating processes • Participate in building strategy with the Program Director & Lead for Demand Management & MDM • and implement the strategy and evolution of the MDM capabilities • Assist chair master data working group aimed at helping define data principles and designs (e.g. rules); Define detailed operating process including planning (master, reference data processes) • Act as the owner of centralized reference data hierarchies (industry, service lines) • Accountable for data quality controls, measurement, and issue resolution • Define and prioritize systems integration between MDM and source/target systems (cloud) including liaison with system owners and custodians
Architecture Lead	<ul style="list-style-type: none"> • Manages the end-to-end solution architecture/design; dissemination of the vision; producing IM architectural principles to ensure that the team is collective focused on the same outcome. • Maintains dimensional data modelling expertise (logical & physical) on the engagement. This will be key to establishing our interpretation of the Ergon Retail business in the presentation layer and to the ongoing BI & A capability of the platform. • Publication and enforcement of architectural standards to ensure ongoing architectural integrity. • Defining common or shared business domains within the star schema or data marts.
Integration & Storage Lead	<ul style="list-style-type: none"> • Responsible for building out the modular components of the data warehouse solution in accordance to the proposed Next Generation IM architecture. • Multi-skilled across the various platform technologies these roles are responsible to construct the handling and flow of data via common ingestion patterns, configure meta data management solution, build out calculations engines, and capture & configure data quality metrics across the DWH layers. • Perform Unit and Integration Testing as required by the assigned governance rhythm. • Manage the impact of source system changes on the data warehouse
Data Scientist & Health SME	<ul style="list-style-type: none"> • Develop analytics solutions on big data platform - handling data ingestion, transformation and presentation of non-traditional data sources such as streaming, geospatial and binary data. • Utilises specialised big data ecosystem components such as Azure Databricks & Azure Machine Learning Services to perform parallelised computation of heavy analytical workloads. • Performs rapid statistical modelling experimentation and discovery analytics on unstructured data early in the data integration pipeline to uncover insights which would otherwise remain hidden in a fully modelled data warehouse environment.
Visualisation Reporting & UI /UX Lead	<ul style="list-style-type: none"> • Responsible for building out the BI & Analytics catalogue as mandated by the business and/or platform operations. Multi-skilled across the various platform technologies to seamlessly deliver outcomes based on dashboards, visualisations, reports, extracts, portals, and business rule calculations. • Ensures implemented dimensional models are fit for purpose and performant for BI & Analytics use. • Engages with business on establishing business requirements, profiling data and developing prototypes as part of an agile method using the styles, guides and themes established for Ergon Retail. • Performs Unit and Integration Testing plus oversees any User Acceptance testing as required by the governance rhythm. • Closely liaise with Data warehouse consultants to ensure required data flows through the warehouse layers are ready for modelling and BI development. • Performs rapid delivery of ad-hoc BI & Analytics requirements binding data from varied sources and layers to achieve outcomes within specified SLA times.
QA and Testing Lead	<ul style="list-style-type: none"> • Building up and leading the Testing Team to the success of project • Defining the scope of testing within the context of each release / delivery • Deploying and managing resources for testing • Applying the appropriate test measurements and metrics in the product and the Testing Team • Planning, deploying and managing the testing effort for any given engagement
Security Lead	<ul style="list-style-type: none"> • Responsible for the vision, development, and execution of all Cybersecurity related change, training awareness and communications services, including detailed best practices. • Meet program-specific change, training and communications requirements to enhance overall security awareness. • Implement and configure Azure Cloud Security to protect AV's cloud infrastructure and data assets • Support user access and identity management
Change & Comms. Lead	<ul style="list-style-type: none"> • Design and deliver the change and communications program, bringing her experience in large-scale ICT implementations to identify change risks and suitable interventions. • Active member of the core project team • Sit on appropriate leadership/governance committees where required. • Work closely with AV Change/Comms team members to deliver the change requirements • Responsible for the up skilling of nominated AV Change/Comms team members

5. Our People

5.4. Summary Profiles



Prashant Khanna

"I'm here to help you address your complex operational challenges through the use of data and insights."

About me: As a leader in KPMG's Data and Analytics practice, I encounter complex and diverse requirements on a daily basis – some that have the potential to make significant societal and community change. I relish these challenges and seek to immerse myself in my clients environment to understand what makes their data tick. I am in awe of what your paramedics do on a daily basis and I am keen to improve both their experience and the wellbeing of Victorians by contributing my data expertise and leadership to the team.

Role on the Engagement: Engagement Partner

How will I add Value to Ambulance Victoria: With the benefit of the existing relationship between AV and KPMG to help accelerate our delivery, I will go above and beyond to ensure you are receiving the best of what we have to offer for this program. I will lead my team of experienced and passionate cloud platform and analytics specialists to work with you to deliver a future-proofed platform that will position AV to get the very best out of their data assets. I commit to building an even closer working relationship with you as we jointly navigate the emerging data and insights needs for your amazing staff who commit to saving Victorian lives every day.



Anthony Coops

"I'm proud to be helping AV and want to do even more to help you guys succeed even further"

About me: I lead a fantastic diverse team of data, analytics and emerging tech experts and have been at KPMG for a long time. I'm still at KPMG because of the people, the clients and the challenges that these bring. I'm blessed that I and my young family have never had to use your services, but I know this work will make sure if I do, it's the best you can deliver

Role on the Engagement: AV Data Analytics Relationship Partner

How will I add Value to Ambulance Victoria: I first met you on the afternoon of the Bourke Street attack – a stark reminder of why we are here. The success of the Analytics Uplift program is evident in the significant steps forward you have made across stronger capabilities, fit for purpose technology, collaborative ways of working and the focus you now have. I will continue to bring the best of KPMG to help you shape what needs to be done and deliver above expectations. My role is to make sure we continue to have an unwavering focus on paramedics and quality of care and always talking straight, bringing new ideas and getting things done (always on time and always on budget with no overruns). I confidently commit to this given this is what we feel we have done for the past 18 months.



Stefanie Bradley

"I am passionate about the important role emergency services play in the lives of Victorians, and look forward to supporting your team gain the most out of the new analytics platform"

About me: As the Partner in Charge for KPMG's national People & Change practice, I bring over 20 years experience in organisational transformation, change management, strategic human resource consulting, systems implementation and workforce transformation projects nationally and internationally to the benefit of my clients.

Role on the Engagement: People and Culture Partner

How will I add Value to Ambulance Victoria: I look forward to continuing to work with Ambulance Victoria to ensure your team are best positioned to take advantage of this exciting new technology and way of working. I will bring my insights into the unique cultural environment of emergency services (having personally worked across multiple agencies including fire, ambulance, police, ESTA and related agencies). My deep experience across the change and people implications of technology implementation and changed ways of working mean that I am able to support Ambulance Victoria keep people at the forefront of decision making, and highlight the connections and risks arising for your workforce across this complex and ambitious initiative.

5. Our People

5.4. Summary Profiles



"I am proud to be a part of AV's story in providing an outstanding service to Victorians. Helping AV succeed through data and analytics has been one of my most rewarding experience"

About me: I have a passion for data enabled business transformations; and I adopt a hands-on approach to deliver high quality outcomes for Business Analytics, Cloud Data Platforms, Data Engineering, Data Governance, Data Quality Improvement and Enterprise Architecture.

Anuj Solanki

Role on the Engagement: Engagement Leader & Director for Demand Management and MDM

How will I add Value to Ambulance Victoria: As the Director for the Predictive Analytics program, I will be your key point of contact for everything that is required to make this program a success. A role that I have enjoyed playing at Ambulance Victoria for the Data Governance program over the past 18 months. I am proud to be part of the initial thinking that set the foundations of the Predictive Analytics Platform, and the SPOG capability. I have also built an intimate understanding of your data and technology landscape, and more importantly, I have built a great working relationship with AV staff across various functions. My role would focus on keeping the business teams engaged, managing the technical delivery of the platform and user-stories, and helping AV to manage the panel suppliers throughout the program. I am committed, prepared and ready to start on this exciting journey with AV.



"I'm keen to bring new data insight to AV through the new platform, using better technology and approaches for faster and simpler delivery."

About me:

I am a naturally curious data analyst, with strong energy for better unpicking the relationships between AV's operational outcomes (and behaviours) and those of its data. I enjoy combining project and technical skills on developments to achieve high-value data outcomes.

Gerard Barclay

Role on the Engagement: Demand Manager

How will I add Value to Ambulance Victoria:

I have been a part of the KPMG and AV relationship since its commencement in 2017. Within each AV project I've gained great knowledge of AV's business and technical domains, and learnt important lessons for successful project delivery. My focus is on extending and refining my existing understanding of AV's emergency operations, rostering and patient transport to achieve better targeted and quicker development outcomes. I bring the time and commitment to collaborate with AV across delivery, and to directly knowledge share across the joint teams. I look forward to working with Directors, Leads and team-wide to drive the best outcomes for AV through insightful data.



"I love getting deep into AV's data to really understand its challenges and problem solve solutions to improve the data quality and thus, our understanding on what's actually happening out in the field"

About me: I am a passionate data analyst with a keen eye for understanding and delivering high quality, data driven solutions. I greatly enjoy drawing insights from data and look forward to work with you to address all your data needs.

Role on the Engagement: Master Data Management Lead

How will I add Value to Ambulance Victoria: Having been on your analytics uplift journey with you, I know your data better than most. I deeply understand the challenges and limitations with your data (and how we can work together to overcome them). I have provided in-depth knowledge and expertise in data governance, data quality, etc., to work with you to successfully develop the Data Quality Analytics Remediation Program and the Finance Technology Roadmap and I look forward to applying this knowledge in my role leading Master Data Management.

5. Our People

5.4. Summary Profiles



Leo Kozhushnik

"I'm excited to have an opportunity to work with AV working at the forefront of innovation, helping AV bring the next-generation data platform to life"

About me: I have passion for data driven solutions and have been privileged to work across various industry verticals. I have extensive technical expertise across different technologies with advanced understanding and in-depth knowledge of industry-leading trends and the ability to deliver outstanding tangible results focused on operational efficiency, strategic objectives, client exceptions and information management & data road map.

Role on the Engagement: Director for Solution Architecture and Integration

How will I add Value to Ambulance Victoria: I have been working with DHHS on delivering RHEMS project that enabled monitoring of Emergency Department Presentation across the state in Real-Time via Dashboard & SMS/email alerts used to trigger when presentation threshold breach, enabling Emergency Control personnel to direct mission critical action. This gave me a better insight and greater appreciation in Emergency Response and proactive Hospital Capacity Planning. I look forward to bringing this knowledge as an aid in achieving great heights for AV!



Krishna Nadimpalli

"I'm passionate about architecting and delivering the right solution that will enable AV to become a world-class Emergency services provider"

About me: I enjoy architecting and building Microsoft Azure data and analytics platforms and bring a strong understanding of AV's systems and data landscape through previous projects.

Role on the Engagement: Architecture Lead

How will I add Value to Ambulance Victoria: I have been involved in the delivery of a number of projects spanning finance, operations, HR and rostering at AV since July 2017 including the Technology Roadmap for Finance Reporting and Analysis, Quick Scan and Roadmap, agile delivery model and multiple Data Governance initiatives. Through this experience, I bring a broad and detailed understanding of Ambulance Victoria's systems and data landscape including the challenges, opportunities and constraints which will help guide the design of the right architecture that will help achieve the vision of the Predictive Analytics Platform.



Praveen Thirukonda

"I'm passionate about solving business challenges using emerging technologies."

About me: I am the Lead Data Engineer and an Associate Director in the KPMG Data & Analytics Team. I bring over six years of experience in Software Engineering, Data Engineering, Big Data technology, Cloud Analytics.

Role on the Engagement: Integration Lead

How will I add Value to Ambulance Victoria: I am experienced in working in an agile, fast paced environment to deliver successful results. I led the technical design, architecture and delivery across a large number of Big Data & Cloud Analytics engagements across various government, financial services, health care, utilities across different countries. I have been involved with all phases of the Data Analytics lifecycle ranging from Data Wrangling, Analysis, Design, Development, Platform Architecture, Testing. Prior to joining KPMG, I was working in the R&D division of a large automotive manufacture developing their cloud platform.

5. Our People

5.4. Summary Profiles



Mark Geels

"I'm excited to help bring AV into the next-generation of data platforms and build on the great work we have done together"

About me: I love all things data &, and I have truly enjoyed working shoulder to shoulder with AV, helping you build and uplift your analytics capability. I bring years of relevant experience and have spoken at global events on AI, platforms and data.

Role on the Engagement: Director for Data Science and Analytics Delivery

How will I add Value to Ambulance Victoria: I have been working with you, leading KPMG's aspect of the AV Analytics Uplift program since its inception in March 2017. In that time I have worked across almost all areas of the organisation, from emergency operations, to finance, and from rostering to patient transport. As well as delivering new analytics and data science insights, I helped lead the introduction of the AV agile delivery model and designed the construct for the new Centre for Information Management and Insights (CIMI). From this work, I have built up a wealth of operational and technical knowledge and broad network across AV which I will leverage to help rapidly design and deliver a fit for purpose platform.



Abigail-Joy Low

"I'm passionate about working with clients to make the most of their data in order to drive strategy and operations, and ultimately bring organisational improvements"

About me: I have taken clients on the full journey of designing and implementing bespoke data science products on Cloud Platforms, including data sourcing strategy, storage, advanced analytics and visualisation. I also have Public Sector experience and worked as Economist in the Singapore Government, where I applied econometrics & machine learning to inform public policy & economic research.

Role on the Engagement: Data Science Lead

How will I add Value to Ambulance Victoria: I have worked with AV on advanced analytics sprints to rapidly design and prototype tools that would uplift Paramedic Performance. I also have extensive experience designing and implemented bespoke data science products on Cloud Platforms that are embedded in our clients' operations. I will bring my contextual knowledge of AV and experience delivering end-to-end advanced analytics solutions to the AV team in order to make a difference with data.



Chantal Suder

"I'm passionate about leveraging data and creating visualisations that will help AV make a difference"

About me: I love creating data driven solutions that make a difference. From visualisation and user experience design to full-stack development, my focus is on delivering high quality solutions that are tailored to business needs.

Role on the Engagement: Reporting and Visualisation Lead

How will I add Value to Ambulance Victoria: As the reporting and visualisation lead, I will be focused on forging a deep understanding of the specific reporting and user requirements of AV, and creating a tailored user experience that will enable quick and user-friendly reporting. I am looking forward to bringing my experience with the design, implementation, and deployment of visualisations and web-applications across a wide range of industry and government sectors (including previous experience working with health & emergency) to AV to provide it with a high quality solution tailored to its needs. I am excited to bringing my skills to this project to enable AV keep making a difference every day.

5. Our People

5.4. Summary Profiles



"I look forward to using the experience I have acquired across many business sectors to ensure that Ambulance Victoria implements a next generation software platform that allows for an efficient and streamline experience; for both patients and the ambulance worker alike."

About me: Verifying and validating that new systems, workflow & processes are correct and inline with the client needs is what motivates me. To know that Ambulance Victoria guidelines, processes and procedures have been implemented to the highest standard is my priority.

Stephen Baxter

Role on the Engagement: QA and Testing Lead

How will I add Value to Ambulance Victoria: This field of work is new for me, but I know that using my testing knowledge and experience gained over more than 20 years across Banking, Telecommunications, private industry and University will allow me to deliver the best outcomes for Ambulance Victoria.



"Embedding security into systems is my passion and I look forward to working towards building this next generation platform that it is cyber resilient and trusted by AV's customers and stakeholders"

About me: I am a cyber security professional with passion for technology. My background in system development, exposure to variety of technology systems and years of experience in working with both technical and business stakeholders allows me to provide practical insights and security thought leadership.

Role on the Engagement: Security Lead

How will I add Value to Ambulance Victoria: I have an appreciation of AV's unique cyber security challenges through my involvement in cyber security reviews and assessments. I have experience in designing system and network security architecture for a variety of technology and business environments. I will combine my in depth technical skills with an appreciation of AV's business risks to provide relevant and insightful input into the security design and build of the platform.



"I look forward to working with AV to make this change not only to make the change happen, but more importantly, make it stick"

About me: Personable and proactive, I have a successful track record in transformational change management. I am a strong communicator and facilitator who has worked in both the public and private sector.

Sarah Dobson

Role on the Engagement: Change and Communications Lead

How will I add Value to Ambulance Victoria: As a change manager I see myself as a translator. I work across streams to ensure the organisation is ready for the technical solution. With a passion for people, I work well at engaging various stakeholders to agree common solutions and outcomes. I will bring my global experience of working within various industries (including both lessons learned and innovative ideas) to deliver successful change at AV.

6. Our Credentials

Be sure to check out our **interactive** proposal microsite:

Visit: <https://ambulance.gateway.kpmg.com.au>

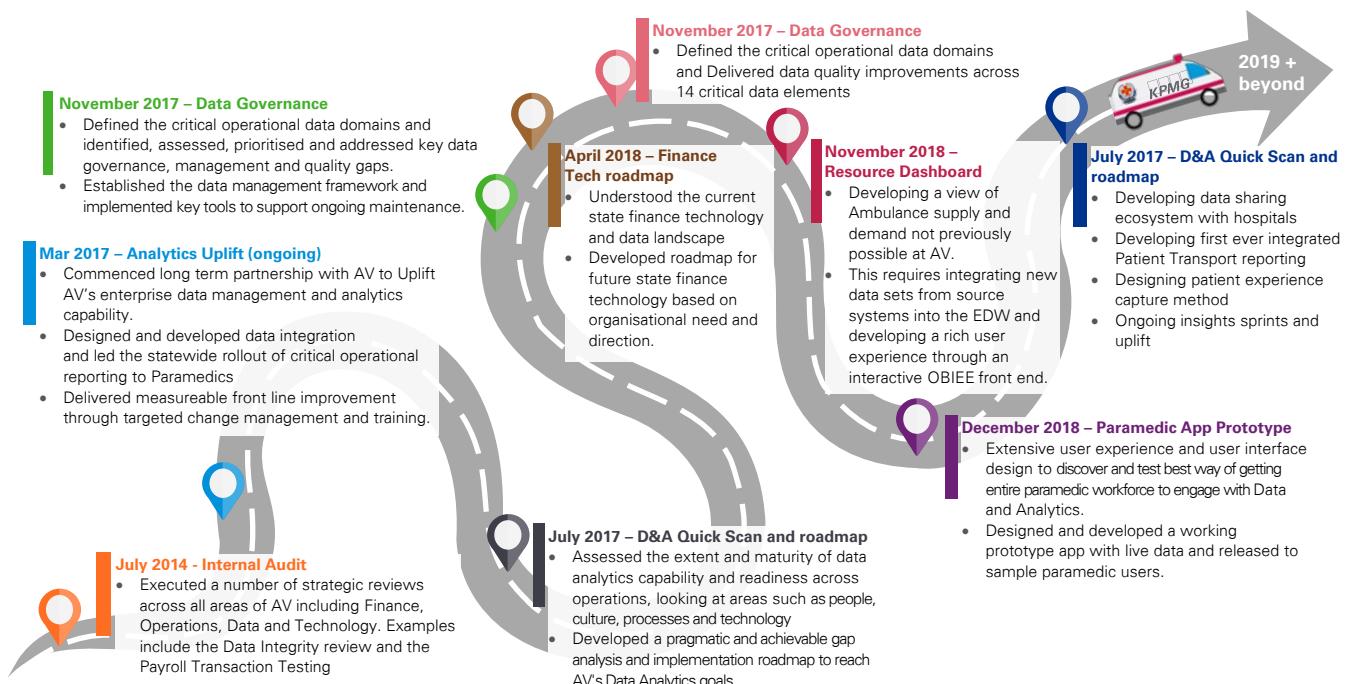
Password: #ambos4life



6. Our Credentials

6.1. Our Journey with AV So Far

Ambulance Victoria and KPMG have been working shoulder-to-shoulder since July 2014, delivering real value to the back office and front line through a diverse range of services. We see this relationship as an ongoing journey where we continue to build and share our collective knowledge and experience to improve the operational and financial outcomes for both AV and the citizens of Victoria.



As you've seen from our work delivering Analytics Uplift, we are always committed to investing in you, finding new and innovative ways to bring more value to AV, beyond what's written in our engagement letters.

Below are some of the areas we have invested already:

- Executed global hackathon for demand prediction and hospital selection decision support
 - Planned and facilitated two people and change collaboration workshops
 - Developed roster optimisation POCs
 - Hosted insights centre sessions and provided input into technology and cloud analytics platform options
 - Hosted workshops with KPMG global data analytics lead and Nobel prize participant Sander Klous
 - Provided RFT development support for paramedic MVP app
 - Provided additional out of scope ETL and development work during project delivery

And just as we've done on the analytics uplift program with you, we will continue to invest in you throughout this engagement. Check out section **7. Value Added Initiatives** for more details.

6. Our Credentials

6.2. KPMG is a Proven Global Microsoft partner

We are excited you have chosen Microsoft as your primary cloud platform provider. You can rest easy knowing KPMG and Microsoft have worked in partnership for over 10 years, with many of our Australian professionals having significant experience in developing solutions on Microsoft and Azure products and holding relevant Microsoft certifications.

During 2017 KPMG launched a global innovation and development service; The Microsoft Digital Solution Hub, which is a global innovative co-development organization with Microsoft that develops business apps and Microsoft based solutions for our customers.

KPMG's member firms all around the world has been successful during the past years to provide our customers Microsoft Dynamics based solutions. This has given us a lot of Microsoft Awards and our customers valuable business platforms to improve their business.

KPMG's numerous Microsoft awards

AWARDS & RECOGNITION		
<h1>Microsoft Partner</h1>	<p>2018 Innovation Partner of the Year Consulting & SI Cloud 2018 Partner of the Year Finalist Health Award 2018 Partner of the Year Finalist Artificial Intelligence 2018 Partner of the Year Finalist Public Sector Enterprise IMPACT Gold Application Development Gold Data Analytics Gold Customer Relationship Management Gold Enterprise Resource Planning Gold Collaboration and Content Silver Data Platform Silver Learning</p>	<p>2018/2019 INNER CIRCLE for Microsoft Artificial Intelligence</p> <p>2018/2019 INNER CIRCLE for Microsoft Dynamics</p>

6. Our Credentials

6.3. Summary of Our Credentials

As an emergency services provider, AV has no time to waste. Delivering this solution needs to be done with minimal disruption to ICT and your wider organisation. For this reason, you need a partner you can trust to get the work done right and involve you at the right times so you can rest easy and focus on delivering outstanding emergency healthcare.

With KPMG you're in great hands. You'll see below that we've done this all before, but most importantly, we've done much of this with you already, having delivered AV a number of complex, long term projects using many of our proposed team members, leading methodologies, and latest technology – always on time, on budget and of the highest quality.

In short, we've never failed you.

We have outstanding experience delivering Data & Analytics engagements involving real-time data integration on Azure and other cloud platforms that have always delivered sustainable improvement for our clients. The market has recognised this, with KPMG being named the global leader in analytics by Gartner and Forrester for two years running.

The table below highlights just some of our deep and broad experience in all the areas that are important to you:

Client	Project	Relevance to Ambulance Victoria requirements for this engagement											
		Data and Analytics Solution			Microsoft Azure-based Solution	Program Management	Change Management	Real-time 24/7 Data Integration	Unstructured Data Analysis	Predictive Analytics	Interactive Reporting and Visualisation	Master & Reference Data Management	Victorian or Federal Government
		Design	Implementation	Support and Maintenance									
6.4 FEATURED VICTORIAN CASE STUDIES													
Ambulance Victoria	Analytics uplift + multiple engagements	●	●	●	●	●	●	●	●	●	●	●	●
DHHS	Data and Analytics for Child Protection	●	●	●	●	●	●	●	●	●	●	●	●
H&H Group – Swisse	Implementation of Global Data Lake	●	●	●	●	●	●	●	●	●	●	●	●
St John of God Private Hospital	Clinical Command Centre	●	●	●	●	●	●	●	●	●	●	●	●
Rural Fire Services NSW	Implementation of KPMG Single Pane of Glass	●	●	●	●	●	●	●	●	●	●	●	●
6.5 GLOBAL CASE STUDY													
Rotherham Hospital	Emergency Department Azure AI	●	●	●	●	●	●	●	●	●	●	●	●
6.6 ADDITIONAL CASE STUDIES													
ISPT	Design and Implementation of Market Intelligence Solution	●	●	●	●	●	●	●	●	●	●	●	●
Global Oil and Gas Co.	Master Data Strategy and Implementation	●	●	●	●	●	●	●	●	●	●	●	●
Ambulance Services NSW	CAD System Upgrade	●	●	●	●	●	●	●	●	●	●	●	●
VicTrack	Implementation of Arwin	●	●	●	●	●	●	●	●	●	●	●	●
Australian Super	Strategy and Design of a modern Data Analytics platform	●	●	●	●	●	●	●	●	●	●	●	●
Chevron	Design of Data and Analytics Platform	●	●	●	●	●	●	●	●	●	●	●	●
Department of Education & Training	Panorama Dashboards	●	●	●	●	●	●	●	●	●	●	●	●
DHHS	Health Strategic Alliance	●	●	●	●	●	●	●	●	●	●	●	●

6.4. Our Featured Case Studies



Analytics uplift + Multiple Analytics Engagements

Ambulance Victoria – 2017 to ongoing

Situation



Ambulance Victoria's mission is to deliver outstanding emergency health care every time by getting the right response to the patient in the right time. AV has access to rich and varied data sets and has recently moved to a new DW to manage this data. However there is sometimes limited confidence in the quality of the data, availability of reporting and insights, and understanding of the transformations it goes through between source and target. Furthermore, the original model for distributing reporting and analysis of information to operations was manual and restricted to descriptive and diagnostic analytics.

KPMG's Role



KPMG has been working together with AV on a range of initiatives to address new & longstanding challenges to collectively uplift Data Analytics capability across the organization. Among other things, KPMG has:

- Delivered immediate value by developing a suite of critical benchmark and performance reports to provide response time insights to groups, teams and paramedics. As part of this, we have developed new methods to translate detailed GPS polling information into actionable time segment and geospatial reports using Google APIs and geospatial analytics.
- Developed an analytics gap analysis and roadmap for future improvement to uplift the maturity of AV's Data, Reporting and Analytics capability by understanding the current gaps and opportunities. This has been followed up by a range of additional projects including a financial analytics technology roadmap, enterprise reporting framework and data quality remediation work.
- Developed a new Operating model for the Data Analytics Centre for Information Management and Insights, including required skills, capabilities, processes and organizational structure to deliver for now and into the future
- Designed and executed analytical 'Deep Dive sprints' with AV and KPMG
- Developed an interactive prototype mobile app for paramedics to measure and monitor their own performance
- Begun engaging with hospitals to deliver a data sharing solution for patient outcomes



Project team member, **Mark Geels**, on observer shift with Ambulance Victoria

How KPMG added value



KPMG is helping AV to improve its response times and clinical outcomes by embedding data and analytics to identify what happened and why (descriptive), be ready for what will happen next (predictive) and know what to do before it happens (prescriptive).

Through working shoulder to shoulder with AV, KPMG has delivered actionable reports and insights which focus on critical response times, whilst upskilling the analytics teams of AV. The reports allow for team leaders, group managers and paramedics to accurately track performance and are currently being used as a performance uplift tool to improve response times and clinical outcomes.

As a value-add, KPMG delivered a [global hackathon](#) involving 17 teams across 5 continents using machine learning and artificial intelligence applications to accurately predict ambulance demand by geography and then direct the right patient to the right hospital based on clinical need, patient demographic, hospital services and wait times. We will continue to develop and implement new emerging technology solutions to solve AV's most complex challenges.

Demonstrated skill sets

- Intimate knowledge of AV, its business landscape and requirements
- Data Integration and Big data ingestion
- Data extrapolation
- Advanced Analytics
- Data science and complex modelling
- Management reporting
- Data Quality improvement
- Validating existing datasets
- Data gap identification.
- Program and Portfolio Management
- Cultural Change and Communications

6. Our Credentials

6.4. Our Featured Case Studies (cont.)



Data and Analytics Platform for Child Protection

Department of Health and Human Services – 2018

Situation



As part of the continual work to drive better outcomes for clients, DHHS has been involved in redesigning the community and social services system by finding innovative ways to support frontline staff in providing more targeted intervention and better consistency for services. As part of the larger improvement program, the organisation is looking at how to better use service usage data it collects and make this valuable information available to frontline staff.

Initially, the organisation built a prototype predictive model to assess if it was feasible to predict adverse outcomes and factors for early intervention. They sought external support to enhance the models, and build and pilot a tool that would provide access to service usage data in a small area of the organisation. The primary purpose of the tool is to support (not replace) decision making for frontline staff by supporting information gathering process and showing factors based on historical data.

KPMG's Role



KPMG supported DHHS with assessing, enhancing and productionising the prototype models, and worked closely with frontline staff to determine design and practice needs, while navigating data and analytics solutions so that a tool could be built to specification. This included the following activities:

- Working along side departmental staff to understand, assess, enhance the prototype models.
- Working closely with end-users to iteratively build the solution and deliver in sprints. This involved stepping through processes and usage requirements in several interactive and iterative workshops. These user workshops (showcases) and the iterative builds were conducted using Agile methodology, so that expectations for the solution design, and the UI could be fully aligned between developers, product owner and other key stakeholders
- Working with third-party vendors and the technology department to build a solution that fulfilled highly secure data handling and user access requirements
- Building the tool on MS Azure infrastructure and while ensuring high performance for large data volumes and functional restrictions from off-the-shelf components
- Working with key stakeholders and SMEs to build and deliver a learning program that taught them how to use the tool, and the purpose and importance of the pilot
- Support in designing and delivering the pilot, along with operational and technical support during the pilot for end-users and project staff.

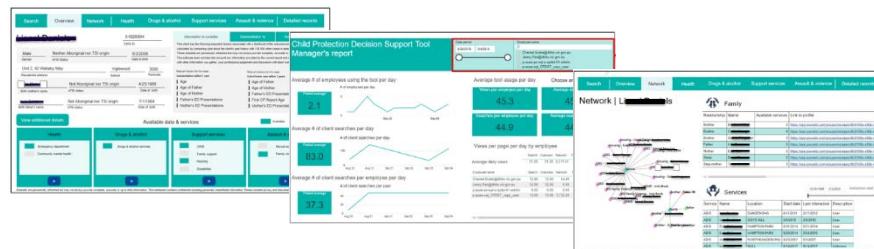
How KPMG added value



KPMG was able to deliver a fully working and highly performant tool to the client despite infrastructural challenges and a very tough operational environment. As the first pilot delivery of an analytics tool of its kind, we have supported the organisation in gaining a first-hand operational experience in deploying a tool and understanding the impact of this on their teams during their pilot. We have provided them with integrated access to service usage data for the first time, not otherwise easily available or accessible, and a technological design footprint to be used in further projects.

Demonstrated skill sets

- Microsoft Azure Design Implementation
- Support and Maintenance
- Program Management
- Unstructured Data Integration
- Advanced Predictive Analysis
- Master and Reference Data Management
- Solution prototyping and productionisation
- Agile methodology user workshops



Client Reference:

Michael Coppola,
Assistant Director
Systems Intelligence and
Analytics Branch
0429436381
Michael.Coppola@dhhs.vic.gov.au



7. Our Credentials

6.4. Our Featured Case Studies (cont.)



Implementation of Global Data Lake

H&H Group – Swisse (healthcare) – 2018 and ongoing

Situation



► Our client was experiencing rapid growth with their emergence from the Australian retail health setting, expanding into global markets across the world. With this expansion came the presence of siloed data sources and the accompanying mismatch of sources of information across the business. The Business Intelligence team were aware of the need for their analytics capabilities to support this rapid growth, needing to both be a scalable solution and provide multiple business units with agile access to a 'single source of truth'. The client required an Microsoft Azure-based architecture that supported global connectivity and real-time business reporting across all international markets, and for all units within the business.

KPMG's Role



► KPMG were engaged to design and implement a global, full-scale Business Intelligence and Data Analytics Platform on the Microsoft Azure platform. This entailed developing an understanding of the high level requirements provided by the client, designing the right base architecture for the platform, collating data from all areas of the business, integrating this data into the Microsoft Azure platform and providing real-time Power BI reporting insights, custom-built to the requirements of each business unit.

In addition to building the Data Analytics Platform, KPMG was also responsible for training and up-skilling the Swisse BI team who had limited familiarity with the Microsoft Azure platform and its components.



How KPMG added value



► KPMG developed a centralized, secure, highly available and resilient platform that consolidated a wide variety of data (Excel, Dynamics etc.) across the business (and all locations) to provide the client with insightful, cross-functional reporting capabilities. These were not only consistent across all areas of the business, but provided real-time business intelligence and analytics in order to facilitate decisions to multiple different stakeholders within the operations decision path.

This included (amongst others):

- Accurate real-time inventory and supply chain reporting
- Entity-wide finance reporting

Through the process of ingesting and modelling Swisse's data, KPMG have highlighted key master and reference data issues that are currently being addressed by Swisse.

KPMG maintains an ongoing relationship with the client and future phases of engagement are on the horizon, including Advanced Analytics and AI capabilities to further develop the client's high-performing data-driven strategy.

Demonstrated skill sets

- Microsoft Azure Design and Implementation
- Data Strategy
- Unstructured Data Integration
- Program Management
- Interactive Power BI reporting
- Near real-time data integration
- Master and Reference Data Management



Client Reference:
Felicity Nutter
Director, IT
Felicity.Nutter@hh.global



6. Our Credentials

6.4. Our Featured Case Studies (cont.)



Clinical Command Centre Dashboard

St John of God Private Hospital, Murdoch – 2018

Situation



► Our client was facing an increasingly complex and challenging operating environment. For private hospital operators, these challenges are manifested in more volatile demand and aggressive competition. An opportunity was identified to simultaneously improve the stakeholder experience and also improve the performance of its operating theatres. The challenge for this engagement was to overcome historical barriers to transformation and to get better control of daily operations through the use of 24/7 real-time critical analysis and decision-support.

KPMG's Role



► KPMG delivered on the client's vision for a technology-enabled Clinical Command Centre. Project objectives were realised through multiple parallel streams of work, including:

- The development of sophisticated, low-latency visualisations of theatre performance that promote proactive problem solving, and identify bottle necks and delays. These visualisations are interactive, enabling users not only to see what is going on, but to interact with and make changes to key parameters in real-time. The system is open to all, so that depts. can understand each other
- Procurement and implementation of Real-Time Location Service technologies to improve data quality and promote more efficient work practices, and
- Implementation of 5S lean practices within the operating theatre complex to improve the organisation of key equipment, in turn improving efficiency and staff experience.

These work streams came together in the form of a Clinical Command Centre powered by real-time data that informs decisions made by redefined clinical roles. Throughout this engagement, KPMG provided hands-on program management and change management support to ensure that those involved in delivering care were actively engaged in the design and implementation activities.

How KPMG added value



► This project delivered a number of clear benefits to the client. The convergence of 24/7 real-time data has ensured not only that the data delivers insights, but that it is acted upon in a timely way to avert issues and improve the quality of care. The scale and interactivity of the visualisations means that stakeholders (for example surgeons) have begun – unsolicited – to ask what constructive steps they might take to improve their performance. The technology, people and place have also provided a catalyst for ongoing dialogue about the nature of performance and its enablers, and how data analysis could be scaled to improve integration of care with other parts of the hospital and health services. The highlights include:

- Capacity for 10% more patients through theatre with scope for further improvements based on the insights from the CCC (up to 20% improvement)
- Improved theatre management with the ability to see what is happening throughout theatres as a 'single pane of glass', enabling quicker and more accurate decision-making
- 98% of patients are now prepared and in holding bays ahead of their expected theatre start time, with significant improvements to recovery flow and management
- Staff report culture improvement, with increased collaboration and better service to doctors and patients, and
- Clinical staff report significant reductions in day-to-day frustrations and material improvements in the smoothness of the patient journey.

Demonstrated skill sets

- Design and Implementation
- Program Management
- Real-time 24/7 data integration
- Unstructured Data Integration
- Advanced Predictive Analysis
- Interactive reporting
- Master and Reference Data Management
- Emergency Services

Learn more here: <https://vimeo.com/238332154>



Client Reference:

Julie Burton - Manager Peri-Operative Services, St John of God Murdoch (NB. no longer in this role)
Mobile: 0421 144 650.



6. Our Credentials

6.4. Our Featured Case Studies (cont.)



KPMG Single Pane of Glass Implementation

Rural Fire Services NSW – 2018

Situation



▶ NSW RFS' fleet of portable weather stations (PWS) has expanded considerably in recent times and this presented the agency with an operational challenge to react and mitigate the real-time fire-related risks by utilising weather observation data. To address this challenge and to support their newly-acquired weather observation capability, our team designed and built a weather station data hub called RFS Falcon.

KPMG's Role



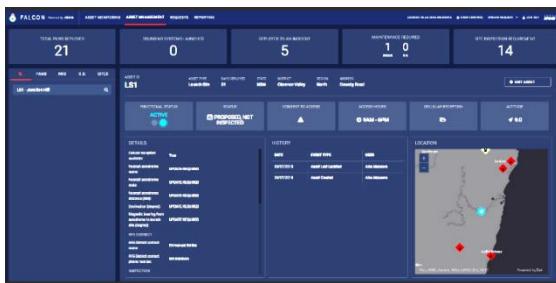
▶ Falcon, powered by KPMG's Single Pane of Glass solution, provides a web control tower for tracking, monitoring, managing and reporting of not only NSW RFS' weather stations, but pulls in valuable data from other supporting assets. It also allows integration of live weather observation data and external data sets such as BoM data feeds along with RFS planning data to integrate predictive analytics to better respond to fire incidents and fire danger ratings. The platform allows RFS to generate and track requests related to transport and proactive deployment of the weather observation equipment and inspection of the sites suitable for such deployments.

How KPMG added value



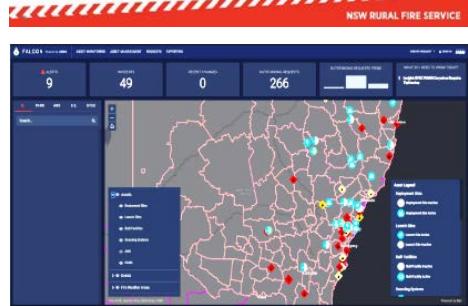
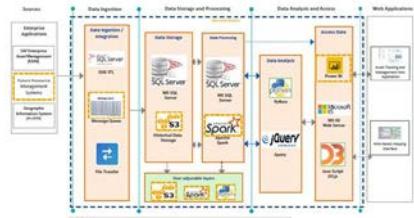
▶ Falcon helps fire behaviour analysts to:

- Assess near-real time data regarding current fire incidents, weather observing equipment health and the issues with its current operational status
- Utilise prescriptive insights and measures to enable activities around fire incidents, helping to plan and make better data-driven decisions when deploying the weather observing equipment to respond to fire incidents throughout NSW
- Predictive asset maintenance for the portable weather stations to manage and prepare for the peak fire season using real time weather station data , and
- Report the insights related to the utilisation of weather observing equipment.



Conceptual Technology Architecture

The diagram below represents the suggested software components to be used by the solution



Demonstrated skill sets

- Design and Implementation
- Program Management
- Real-time 24/7 data integration
- Unstructured Data Integration
- Predictive Analytics
- Advanced Predictive Analysis
- Interactive reporting
- Master and Reference Data Management
- Emergency Services

6. Our Credentials

6.5. Global Case Study



Azure Emergency Department Machine Learning and AI solution

Rotherham Hospital NHS Foundation Trust, UK – 2018

Situation



- Like many hospitals, Rotherham Hospital had issues with breaches to Emergency Department (ED) wait times as well as understanding clinical pathways for critical conditions. Rotherham looked to KPMG to help them solve these problems, to which KPMG took a data driven approach to address two use cases:
- 1: Predict whether a patient will breach the 4 hour ED waiting time target, & identify primary factors influencing the breach
 - 2: Identify & predict clinical pathway variation for clinical conditions, specifically cardiovascular disease

KPMG's

Role



- Starting with over 150,000 patient care records over two years, KPMG built the Azure KODE platform (https://Power_BI.microsoft.com/en-us/partner-showcase/kpmg-kodehealthcare/) (refer **Methodologies and Accelerators section below for more information**) on the Trust's Azure tenant that can serve as an accelerator for future predictive/machine learning analytics.
- By leveraging open-source machine learning models in Microsoft Azure stack, we successfully identified:
- 79% of patients who breached the 4-hour ED waiting time (use case 1)
 - 67% of patients that died within 30-days of discharge & 79% of patients that were readmitted, following a cardiac-related admission (use case 2)
- The machine learning algorithms developed on this platform have performed well, particularly predicting ED breach, and with 'real world' data already curated by the Trust and shaped by clinicians. These results have been validated by the Trust

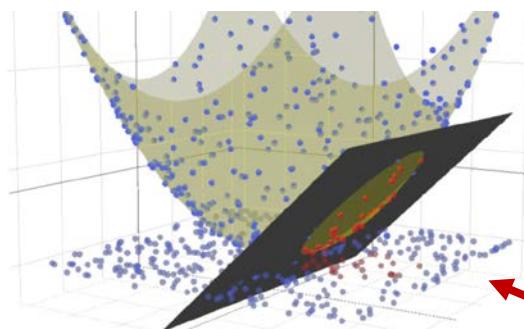
"This [partnership] is really good news, an accolade for Health Informatics and the exemplary work done so far. I look forward to the future collaborations with these industry leaders"

Richard Slater, CCIO, Rotherham NHS FT

How KPMG added value



- Use case 1: We identified service and patient characteristics that offered predictive power for reducing 4-hour ED breaches that can mitigate this risk & improve service delivery
- Use case 2: Our model identifies 'at risk' patients before discharge, enabling clinicians to further tailor supportive interventions and reduce unwarranted variation in outcomes, following a cardiac presentation



Demonstrated skill sets

- Design and Implementation
- Microsoft Azure based solution
- Program Management
- Unstructured Data Integration
- Predictive Analytics
- Advanced Predictive Analysis
- Interactive reporting
- Emergency Services

6. Our Credentials

6.6. Additional Case Studies



Design and Implementation of Market Intelligence Solution on MS Azure

ISPT – 2018

Situation



The Strategy team of a major global property fund is committed to providing house views on economic and property markets to inform domestic investment decisions. In 2018, the organisation established a new international joint venture fund, which required the Strategy team to guide global investment decision making. The team had produced regular updates and research on domestic property markets, but became interested in a comprehensive tool that provided rigorous data-driven investment decision making for senior executives on a global scale.

KPMG's Role



KPMG had worked closely with the client for the end-to-end project. This included product scoping, proof-of-concept stages, procurement of third party data, productionisation design, implementation, and change management. KPMG leveraged their deep understanding of the client's business which allowed us to tailor a fit-for-purpose and cost-effective solution that met the needs of the client. The client's Strategy, Finance, Operations and IT teams were not aware of any other players in the market who could offer an equivalent innovative and robust solution at better value in either cost or delivery.

How KPMG added value

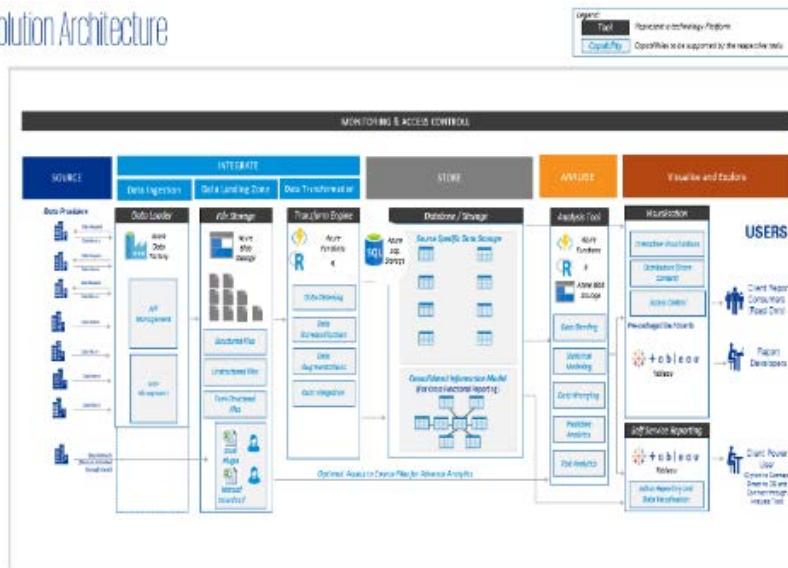


KPMG worked with the client to develop a comprehensive solution that consolidates global economic, property and demographic analytics. This solution provides a dashboard that identifies high potential markets for office investment, by including ranking of cities by structural factors; visualisation of key property performance indicators; economic turning point predictive analytics and quick comparison of geographies and markets based on different dimensions

This Microsoft Azure cloud solution features automated data & analytical refreshes via regularly scheduled data ingestion, storage and analytics. The product is both flexible and scalable, being able to easily expand data storage capacity, cater for new types of data (e.g., unstructured data) and forms of Advanced Analytics.

The automation of the solution was a key differentiator to their business, resulting in their economic and investment analysts having more time to spend on hypothesis testing and market analysis rather than preparing and checking data. Furthermore, the solution is fully Platform-as-a-Service (PaaS) to empower the Strategy team to be able to own the solution, and remove overhead from the client's lean IT team. This has enabled the Strategy team to iterate on the product in a fast and agile way.

Solution Architecture



6. Our Credentials

6.6. Additional Case Studies (cont'd.)



Master Data Strategy

Global Oil and Gas Company – 2018

Situation ▶ A global Oil and Gas Company was undergoing a strategic transformation, part of which included the approach that should be taken to Master Data as this would be a key enabler to other strategic initiatives. KPMG was engaged to assist in the creation of a Master Data Strategy.



KPMG's Role

▶ The client engaged KPMG and U-Collaborate events to design and facilitate an event, bringing together all key stakeholders, to accelerate the design of the Master Data Strategy. Together, they developed a collective understanding of the cost of getting data wrong and the value of data, identified scope, confirmed governance and approach to master data. U-Collaborate helped the client identify the behaviours that will create a culture where data is valued within the company and drive internal stakeholder acceptance.



How KPMG added value

▶ U-Collaborate helped key stakeholders understand why Master Data is important, how we plan to approach Master Data within this organisation and what we will need to do to ensure we can make this happen. The event was attended by approx. 60 participants including the COO, CFO and CIO. The event provided an opportunity for stakeholders to learn more about the value of data and what others had done in the Master Data space, as well as looking how they might apply this in their organisation. This was a chance for the project team to share the work that had been done so far and test this with a broader audience.



In answering this question participants were able to focus on:

- Defining the scope, approach and governance required to enable Master Data
- Behaviours required to create a culture where data is valued
- Barriers and how to overcome them
- High Level Business case to support the next level of funding



6. Our Credentials

6.6. Additional Case Studies (cont'd.)



Emergency Service Provider Computer Aided Dispatch System Upgrade

State Ambulance Service – 2018

Situation



Our client identified that their current Computer Aided Dispatch (CAD) system was outdated and required an upgrade. The Emergency Service provider had attempted the upgrade multiple times previously and failed for a range of reasons including due to a lack of project governance and oversight. The scope of the project included two distinct sub-projects: a Tactical Upgrade of the CAD System and a Strategic Next Generation project to inform a future full replacement of the system until 2030.

KPMG's Role

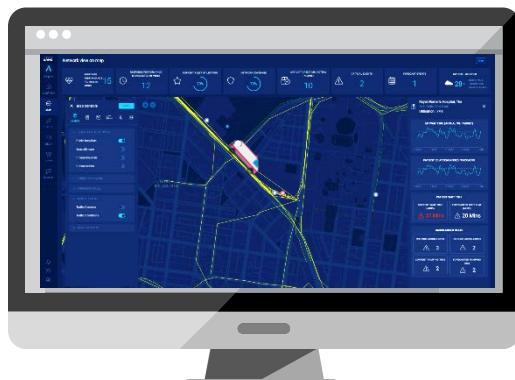


In order to support this client objective, KPMG partnered with the Emergency Service Provider, firstly to undertake a review of the past projects and develop a plan to recover the in-flight project. KPMG worked with numerous stakeholders to drive the implementation of the upgrade, through uplifting project management rigor, controls and governance. KPMG is providing technical leadership through the build and implementation phases, and is driving organisational and behavioural change management including industrial relations management to support the end users.

How KPMG added value



- • Improved stakeholder engagement that will deliver an enhanced end to end CAD system.
- Improved stability and reliability of the CAD system and interfaces.
- Up-to-date software with current policies and enhanced geospatial capability in a stable and supportable infrastructure platform housed in government data centres.
- Integration of the strategic project demonstrates our commitment to work together with the client to elevate the capabilities of the organisation and deliver a roadmap for the future vision of CAD in NSW.
- The strong, supportive relationship between the two organisations will enable the delivery of a next-generation solution that gives significant benefits to the people of NSW.



6. Our Credentials

6.6. Additional Case Studies (cont'd.)



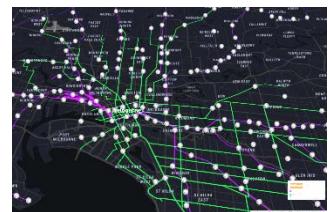
Implementation of KPMG Single Pane of Glass solution

VicTrack – 2018

Situation



The client is in the process of establishing a world class asset management function to improve service quality, reduce costs and drive productivity. The current impediment to this is poor quality of data and lack of a systemised asset register. The business rules around collation of the asset register are not defined and reliance on individual SME expertise and internal knowledge is required as part of current asset management process.



KPMG's Role



KPMG was engaged to assist in creating a refreshed asset register, identify data misalignments and incorporate physical audit feedback for further action. KPMG worked with the client SMEs to codify the business rules and logic in a solution to generate a refreshed version of the Telco asset register in a database collating data from multiple platforms. The codification of the business rules will enable the client to produce a refreshed view of assets automatically. In addition KPMG deployed its continuous monitoring solution that enabled the following:

- Visualisation of Telco assets and sites with Geo spatial context
- Drill down to asset details and review of information sourced from multiple platforms
- Physical audit data feedback capture and review of data misalignments that need to be rectified.

As we are leaders in asset and data management, the solution provided will enable better practice within the Asset Management Accountability Framework (AMAF), ISO8000 for data quality, ISO55000 on information management and PAS1192 for information specification and interoperable processes.

How KPMG added value



The client will now be in a position to get a comprehensive understanding of its Telco asset profile. This will enable the asset management function to drive decisions around asset lifecycle management, asset maintenance, asset data quality & requirements for strategic asset management solution. This accurate and meaningful data will drive better delivery of service, reduced operating costs and has provided digitalisation. It has provided a scalable, sustainable solution for VicTrack moving forward with establishing their world class asset management function.

6. Our Credentials

6.6. Additional Case Studies (cont'd.)



Strategy and Design of a Modern Data Analytics Platform

Australian Super – 2018

Situation



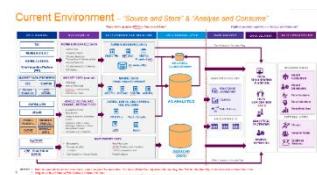
► As part of becoming a more data-centric organisation, the client developed a Data Strategy identifying key drivers and priority business outcomes for delivery across 3-5 years. One key initiative to support analytics and business insight was developing an Enterprise Data Warehouse (EDW) to support decision making and data sharing across key divisions within the fund. The Fund required assistance in developing business case for their data warehouse to support their data and analytics goals, as well as advice on the solution options available to them in the current market.

KPMG's Role



► KPMG supported the client with navigating current market data and analytics solution options, assisting with crystallising the business requirements for data and analytics, and identifying the key business opportunities and considerations in order to develop a EDW proposal. This included:

- Confirming the scope for their EDW and understanding their current systems and data landscape
- Collating and refining their requirements to better serve their strategic priorities and goals
- Providing support with understanding the options available to them for solution architecture, service and deployment models (e.g. cloud vs on-premise), and
- Defining their business case including benefits, case for change and cost.



How KPMG added value



► KPMG supported the client with driving their data agenda and EDW project forward, which had previously stalled due to conflicting priorities. Through the process, we were able to support some fundamental decisions, and provide insight into the key design considerations for the EDW in order for them to understand and endorse solutions provided by the Technology function.



6. Our Credentials

6.6. Additional Case Studies (cont'd.)



Design of Data and Analytics Platform

Chevron – 2018

Situation



The client had commenced a program of work which will see the decommissioning of the primary data warehousing platform. As a result, the Australian Business Unit of a multinational energy corporation had started to explore options for the development of a modern data warehouse which can act as a supplement to the corporate data lake. The client needed a new, custom built solution that addressed the regional desires for agility, accuracy, timeliness and integration with its data services, as well as being a low cost solution in both build and support.

KPMG's Role

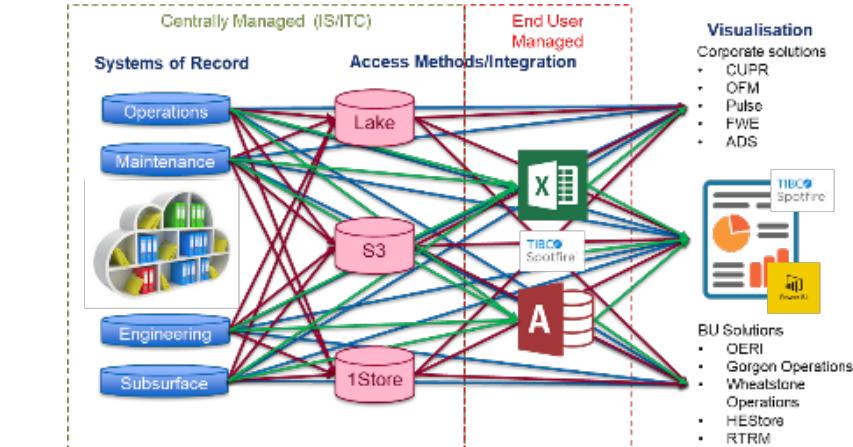


KPMG was engaged to design a modern data warehouse which would supplement the gaps in the global corporate data lake. We worked closely with the IS team and key stakeholders from the business units to understand how they used data and their current challenges with the corporate solution. We were able to identify common themes from all the stakeholders: the current solution was slow, impacted business agility, was not comprehensive and was expensive to change and support. Understanding these requirements, we were able to develop a reference architecture which supported the needs of the business for agility, access to quality data and timeliness of data. KPMG were required to meet the needs of the IS team for a solution which was simple and cost effective to modify and support; and also align with the global strategy of Azure first.

How KPMG added value



The final report set the client on a path of developing a modern data lake which would supplement the additional data needs of the Australian business unit, without disrupting the global strategy. The report detailed guiding principles, technology patterns and best practices along with the reference architecture to enable the client to adapt to changes in the technology environment and global corporate landscape.



6. Our Credentials

6.6. Additional Case Studies (cont'd.)



Panorama Dashboards

Department of Education and Training – 2018

Situation

- The Education state agenda is reliant on the access and use of critical data by school's leaders and the and regional staff. Previously, the schools were provided with static PDF Panorama school level reports and asked to follow up on this initial work. The Data Literacy Strategy (DLS) is now focused to strengthen access and use of this school performance and student assessment data. The initial phase is in-flight and it will give dynamic school level dashboard access to school leaders, making complex data easy to use.

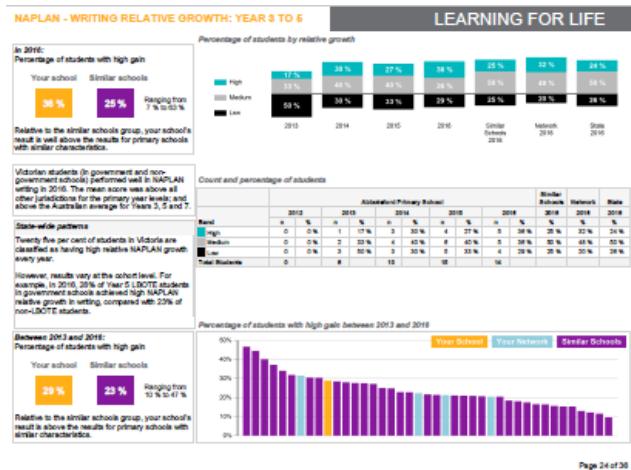
KPMG's Role

- The engagement is currently ongoing and the KPMG team is working hand-in-hand with the department's Performance and Evaluation Division. In conjunction with DET permanent staff, KPMG team members are responsible for a number of roles, including providing design guidance, development of SQL datasets to power the dashboards, development of Tableau dashboards and user acceptance testing of finished Panorama dashboards.



How KPMG added value

- The Panorama interactive dashboards are interactive, online reporting that DET will provide to principals, school leaders and regional support staff. The dashboards are delivered through Tableau Server and integrates internal, external and survey data into a series of relevant and contextualised dashboards. These dashboards allow schools to compare their performance over time, as well as benchmark themselves against a cohort of similar schools. Access will be provided through a secure web portal, available on the DET corporate intranet. Users will have much more timely access to information (current reporting is once annually), with new interactive filtering and data exploration capabilities. Additionally, since the design of dashboards has been improved, DET is now offering a better user experience to their front line staff.



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6. Our Credentials

6.6. Additional Case Studies (cont'd.)



Health Strategic Alliance – 3 year partnership

Department of Health and Human Services – 2018 - 2021

Situation ▶ As of August 2018, DHHS has appointed KPMG as Health Strategic Alliance partner for the next three years. Within this role, KPMG will support DHHS to deliver its strategic agenda across health in Victoria.



Projects within the Health Strategic Alliance program



▶ Over 10 projects have kicked off under the HSA program, across various areas ranging from prevention, like Obesity Strategy, to strategic or regulatory projects within Community Health, funding, evaluations, leadership development, workforce, Aboriginal Health and digital and analytical solutions. For this RFP, the following HSA projects will be of particular interest:

- **AV Financial Review** – KPMG has just completed this engagement, working closely with DHHS and AV's Financial team, Strategy & Transformation Director and broader Executive team.
- **Digital Roadmap** – KPMG will support DHHS in developing a digital health investment roadmap over the coming months.

The Strategic Alliance, and our ongoing strong relationship with AV through other projects, make that we understand your organisation inside out, as well as can bring in useful insights from, and relationships with Victorian government.

How KPMG added value



▶ A core element of every Strategic Alliance project is *capability uplift*. We work shoulder-to-shoulder with DHHS to support them in building or strengthening skills and knowledge e.g. through working in mixed teams, coaching and master classes.

6. Our Credentials

6.7. Our Thought Leadership

In addition to the extensive client engagement experience, we have provided a selection of thought leadership articles that highlight our active involvement in not only Data and Analytics strategy and implementation, but driving social change in the business environment.

Topic / Article	Preview and Highlights
Data and Analytics Solution	<p>'A Blueprint for Success in Healthcare Data and Analytics (D&A)' is a concise but insightful analysis of using data to its full potential and the steps associated.</p> <p>Align with organisation's strategy– A realistic understanding of your organisation's readiness to embrace D&A is crucial.</p> <p>Make sure D&A adds value – Clearly articulating the clinical or business benefits that analytics initiatives will drive you can prioritise.</p> <p>Communicate and engage stakeholders– Lead from the top and engage business early.</p> <p>Implement practical solutions– Flawless execution improves speed-to-business benefit and builds confidence.</p>
Change Management	<p>The 'The Changing Nature of Work' discusses the continual transformation essential to ensure organisations stay relevant.</p> <p>Communication– Many organisations don't realise the amount of investment required to get people engaged in change, this must be communicated down from leadership positions.</p> <p>Layers of change– Effective change management becomes even more vital when there are complex changes occurring at multiple levels of the organisation.</p> <p>Middle Management – Upper and middle management can benefit from aligning the insight.</p> <p>Process– Productive process equals a productive result</p>
Predictive Analytics	<p>'Predictive Analysis, It Works'</p> <p>Culture– Embed analytics into your culture, develop a roadmap for digitisation and analytics and encourage employees to integrate analytics into their work processes.</p> <p>Everyday– Operationalise predictive analytics into everyday decision making. Have a strategy and execution plan to evolve concepts</p>
Project Management	<p>'The State of Play in Project Management'</p> <p>Formal Processes – Only 29% of organisations have formal processes in place to develop project management capabilities.</p> <p>Investment– Investing in project management development programs leads to improved delivery.</p> <p>Centralised PMO– 49% of organisations use a centralised PMO to co-ordinate projects</p>
Data Management	<p>'Master Data Management' is a review of the management of Master Data: what it is and how it can benefit businesses.</p>
Reporting and Visualisation	<p>'Reporting & Visualisation' is an article that discusses the most productive way to use data reports effectively for real insights.</p>
Unstructured Data Analysis	<p>'Organising Unstructured Data for Greater Insight' gleans valuable insights from unstructured data online and from internal sources to drive discussions.</p>
Indigenous cultural competency	<p>'Microsoft Australia: driving Indigenous cultural competency in the workplace'</p> <p>Highlights KPMG's ongoing dedication to reconciliation and contribution to the Indigenous social and economic landscape in the business world.</p>



7. Value Adding Initiatives

Be sure to check out our **interactive** proposal microsite:

Visit: <https://ambulance.gateway.kpmg.com.au>

Password: #ambos4life



7. Value Adding Initiatives

You'll know from our time working with you, that we strive to continually add value to AV throughout all our engagements with you by applying our best practice methodologies, accelerators and latest innovations.

KPMG's methodologies and accelerators will speed up delivery, increase efficiencies, and implement technological improvements in the delivery of the Predictive Analytics Platform. We have specially curated a selection of KPMG's tried-and-tested frameworks and accelerators to deliver the Predictive Analytics Platform efficiently and effectively.

This section outlines how we plan to apply our Ready to Deploy Technology, Methodologies and Accelerators and Innovation practices to this program.

7.1. Ready-to-Deploy Technology

7.1.1 KPMG's Single Pane Of Glass

KPMG Single Pane of Glass— Your Key Accelerator

On day one, you'll get access to KPMG's Single Pane of Glass IP – our fully compliant, agile, and scalable real-time predictive analytics single pane of glass platform (representing a significant \$ saving), so we can move ahead quickly and confidently. Using our experience at AV over the past two years, we've quietly refined and configured KPMG SPOG to the point where it now meets at least 30% of your initial requirements.

KPMG SPOG helps all of AV gain vital insights around areas such as clinical, emergency, non-emergency, and operational rostering and resource management. Check out our proposal microsite to see videos of this solution in action.

<https://ambulance.gateway.kpmg.com.au> Password: **#ambos4life**

KPMG Single Pane of Glass – a KPMG-Microsoft Azure solution – will help AV make data-driven decisions for operational performance. It enables time-critical decisions, **such as ambulance location**, by extending the AV's ability to predict and plan for the future using existing internal (AV and supporting partners' data sources) and external (weather, traffic status, etc.) data. The intelligent data platform and its built-in machine learning predicts outliers, identifies gaps and proactively detects issues. KPMG's Single Pane Of Glass will provide AV with a platform to drive business innovation through your existing data.

Key Capabilities



Highly scalable data platform with smarts to accelerate the delivery. It rapidly integrates and analyses disparate data sources to generate a holistic view of business performance, operational s and predictive decision making.



KPMG SPOG can blend AV's paramedic, ambulance, external and other data, enabling you to understand and improve the health of day-to-day ambulance operations using Machine learning capabilities.



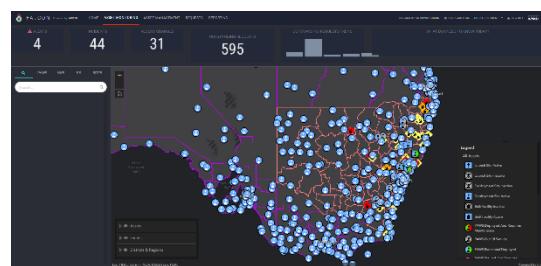
KPMG SPOG integrates with your existing system landscape and analytics tools to ingest the data, and the platform uses new trends in data engineering, voice integration and natural language process to make it easy to access.



KPMG SPOG employs a predictive engine at the heart of its analytic layer to enable proactive management, automated reporting, and drive decision making.

KPMG Single Pane of Glass

KPMG's Intelligent Data Platform for Predictive Analytics



API / MICRO SERVICES

VOICE ML/AI ENABLED

SCALABLE DATA LAYER

SECURITY

- Real-Time Data Insights
- IoT device integration
- Natural language processing and Voice integration
- Web interactions and machine data
- Predictive asset management
- Seamless data integration

7. Value Adding Initiatives

7.1. Ready-to-Deploy Technology

7.1.2 KPMG KODE for Healthcare

KODE for Healthcare, represents KPMG's analytics platform for the healthcare sector. The MS Azure powered data warehouse is being constantly updated, curating a wide range of publicly accessible signals and indicators that help to provide a view into the Quality, Efficiency and Financial performance of Healthcare services.

This data is harvested and organized into an accessible way which enables the KPMG Healthcare Analytics Unit to respond to a wide range of analysis demands. The platform leverages the latest Microsoft technology and makes heavy use of Power BI for dynamic data visualization and interactive data discovery.



KPMG KODE for Healthcare can be found on Microsoft's Partner showcase portal

Visit: <https://tinyurl.com/kpmgKODE>

The platform has been successfully used across a wide range of projects, providing key data insights including:

Quality Margin Improvement: The platform has been extensively deployed to support KPMG's largest NHS turnaround projects, helping NHS providers to identify £Millions in potentially savings opportunities by benchmarking key areas like Length of Stay, Did Not Attend (DNA) Rates and Workforce. It crucially incorporates deep dive modules that make use of local provider data to better understand hospital throughput, flagging efficiency opportunities in areas like Theatres, Outpatient Clinic Planning and 'Frequent Flyer' service usage.

Strategic Transformation Planning: With the NHS committed to bridging the multi-billion funding gap the KODE platform is an essential tool for conducting an initial 'diagnostic', highlighting the greatest opportunities for cost savings, service improvements and service reconfiguration.

Place Based Care: To meet the challenges of the future, there is increasing recognition local healthcare services will need to collaborate more effectively. This demands the development of systems of care that better manage common resources to deliver more value for local populations.



WATCH VIDEO

<https://tinyurl.com/kpmgKODEvideo>



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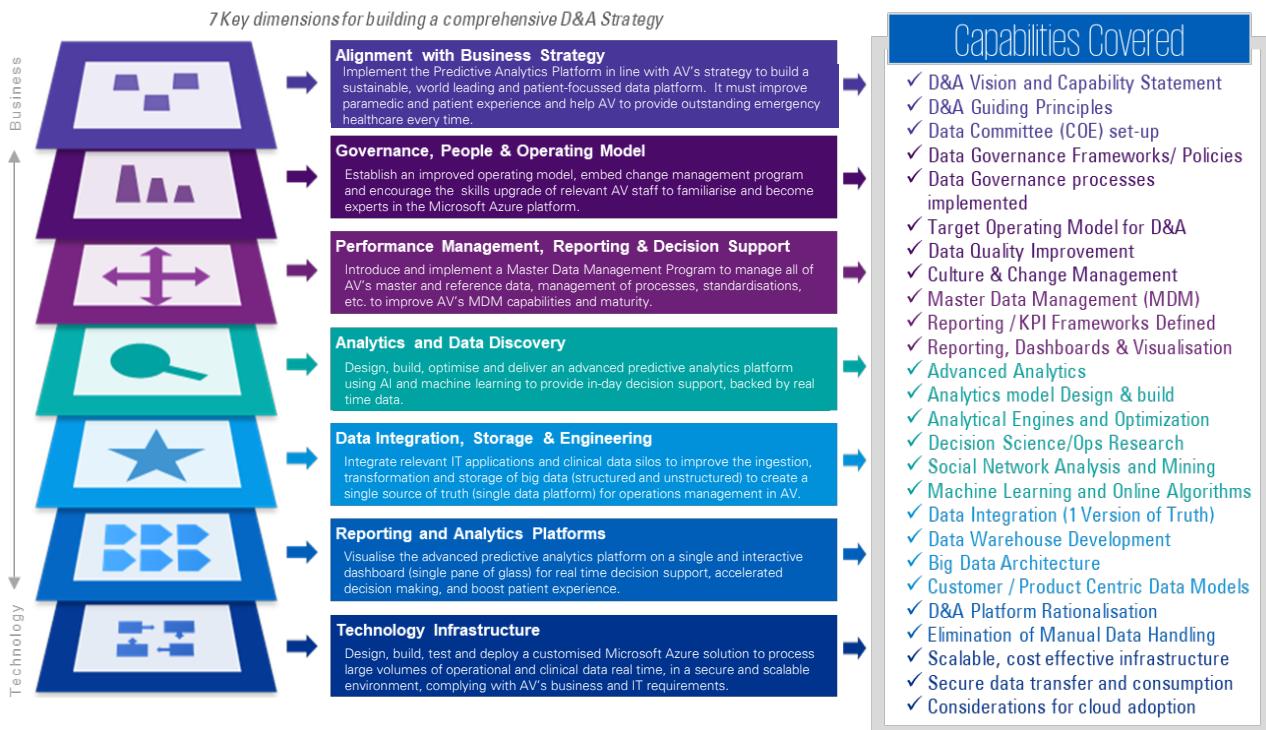
7. Value Adding Initiatives

7.2. Methodologies and Accelerators

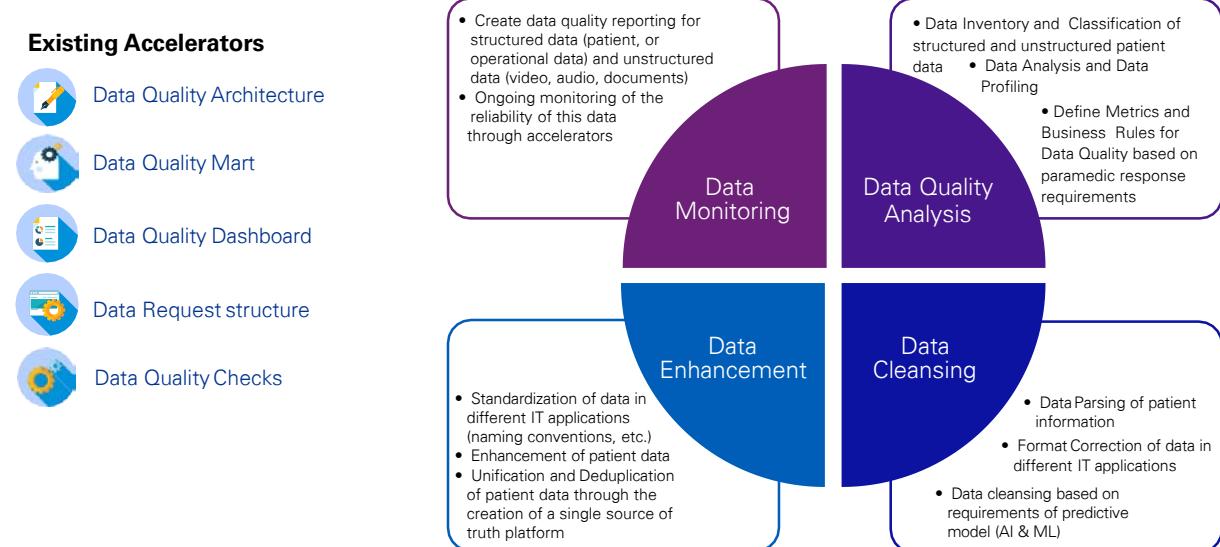
KPMG's methodologies and accelerators will speed up delivery, increase efficiencies, and implement technological improvements in the delivery of the Predictive Analytics Platform. Below are a selection KPMG's tried and tested methodologies and accelerators that we have curated specifically to deliver this solution.

7.2.1. Data And Analytics Strategy And Master Data Management

KPMG's proprietary Data & Analytics Strategy Framework (shown below) will cater to all the different aspects of data management required by AV to successfully build and deliver the Predictive Analytics Platform.



To build a comprehensive and accurate Predictive Analytics Platform, data quality should be implemented based on the specific business requirements, with consideration to AV's structured, unstructured, slow moving and real-time data. Existing KPMG data quality accelerators (shown below) can be used to significantly speed up this process.



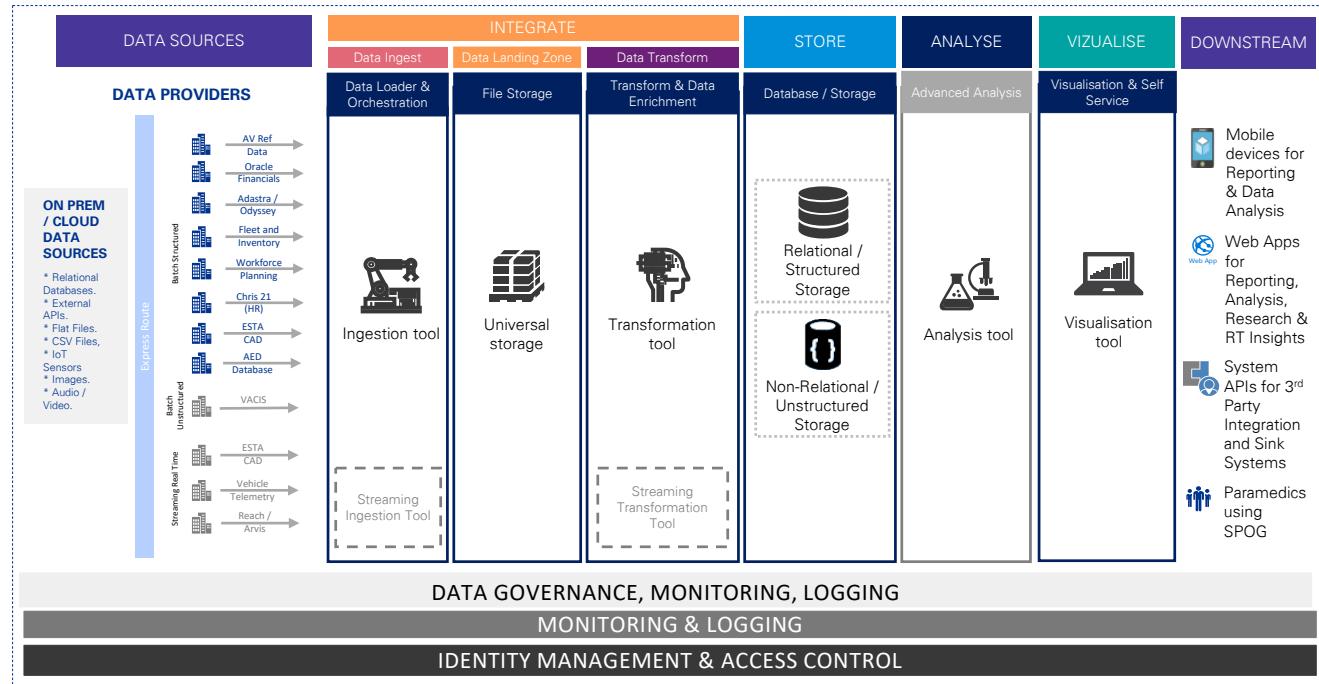
7. Value Adding Initiatives

7.2. Methodologies and Accelerators

7.2.2. Establishing A Modern, Cloud-based Platform Design Pattern

We bring an architectural pattern which is the underlying basis for the KPMG Single Pane of Glass.

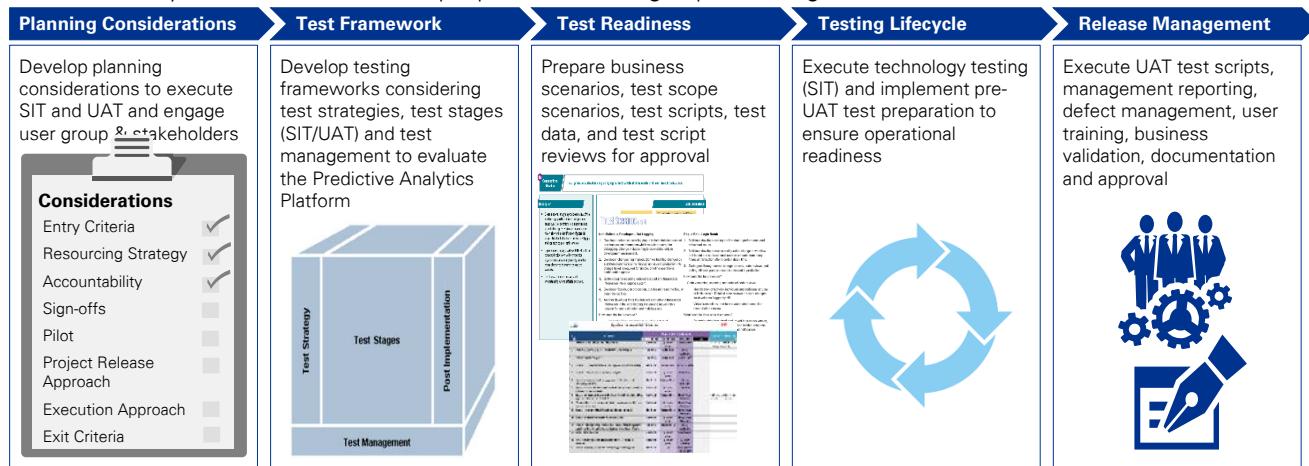
Data integration and interoperability will establish the foundation for data integration across different departments and systems in AV. Structured data (AV reference data, ESTA CAD, AED database, Chris21, Rosters, etc.), unstructured data (Voice, video, clinical records) and real-time data (Vehicle telemetry, CAD, Reach/Arvis, etc.) can be seamlessly brought together using the Microsoft Azure platform to create a unified big data analytics engine.



7.2.3. Real Time Testing

Experience with AV tells us that critical to saving time in re-work from testing and ensuring a successful produce, is early and regular engagement and buy-in with users and stakeholders.

Similar to our previous approach with Ambulance Victoria, we will perform thorough SIT and UAT testing of the Predictive Analytics Platform with a sample paramedic user group, following this robust framework.



7. Value Adding Initiatives

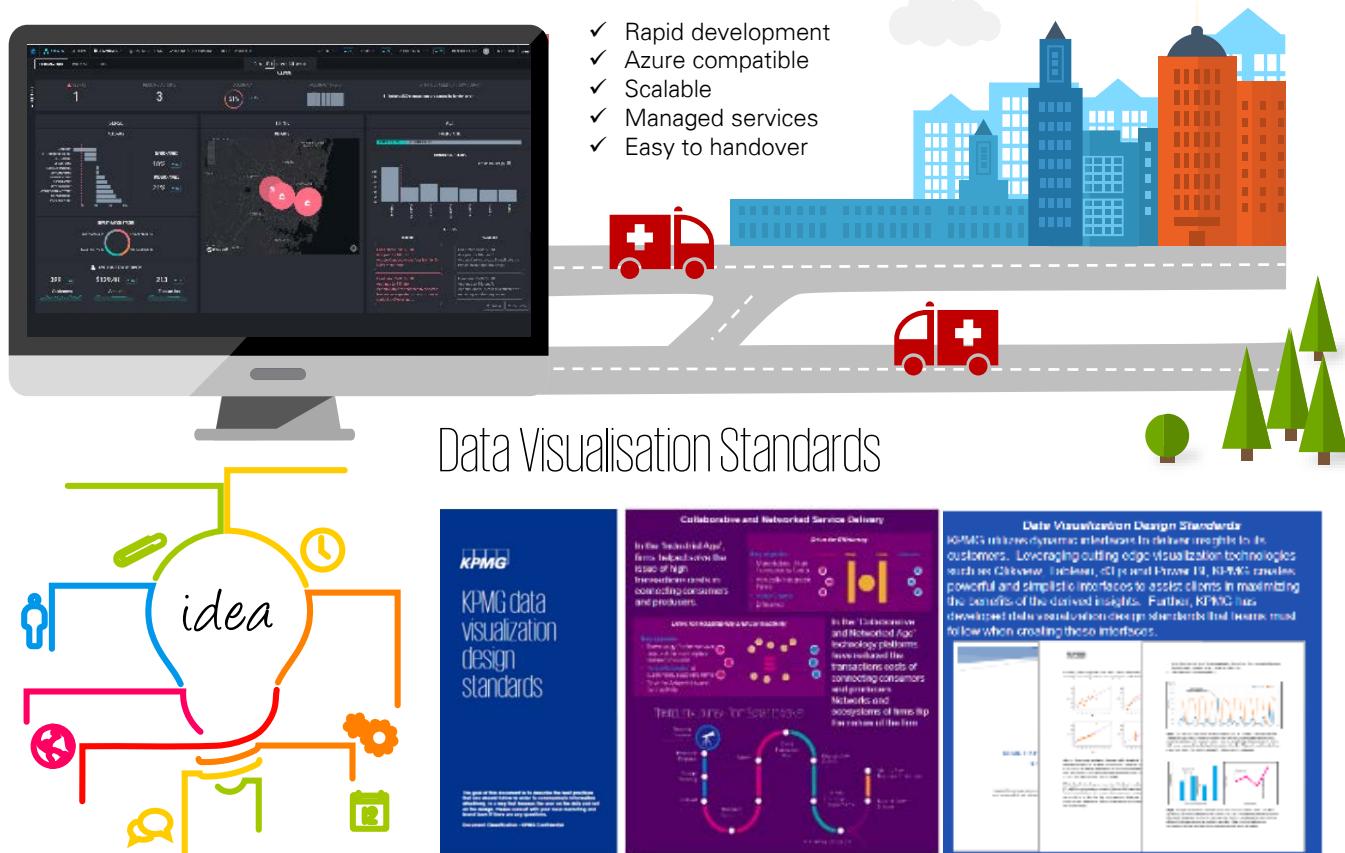
7.2. Methodologies and Accelerators

7.2.4. Data Visualisation

Harness the power of the platform to inform the decisions of ALL AV users

Key to any Single Pane of Glass solution is to deliver a single solution that meets the needs of many user groups. They need an intuitive solution that gets them to their answer quickly to help inform faster, better decisions.

The SPOG solution will use **Power BI; a Azure-compatible real-time BI** and reports visualisation tool. It will bring the interactive dashboard alive through many functions, such as search tools, filter and highlight tools, and detailed reports based on large databases. As it is scalable and compatible across different platforms (mobile, desktop, apps), AV's users can use their preferred tool to consult the SPOG.



Accelerating UI/UX design principles for reporting

For AV's Predictive Analytics Platform, we envisage leveraging our Data Visualisation and Design Standard to help guide both the design and ongoing development QA for the Single Pane Of Glass dashboard.

Some of the key design axioms for the UI / UX standards developed for the platform's reporting will focus on:

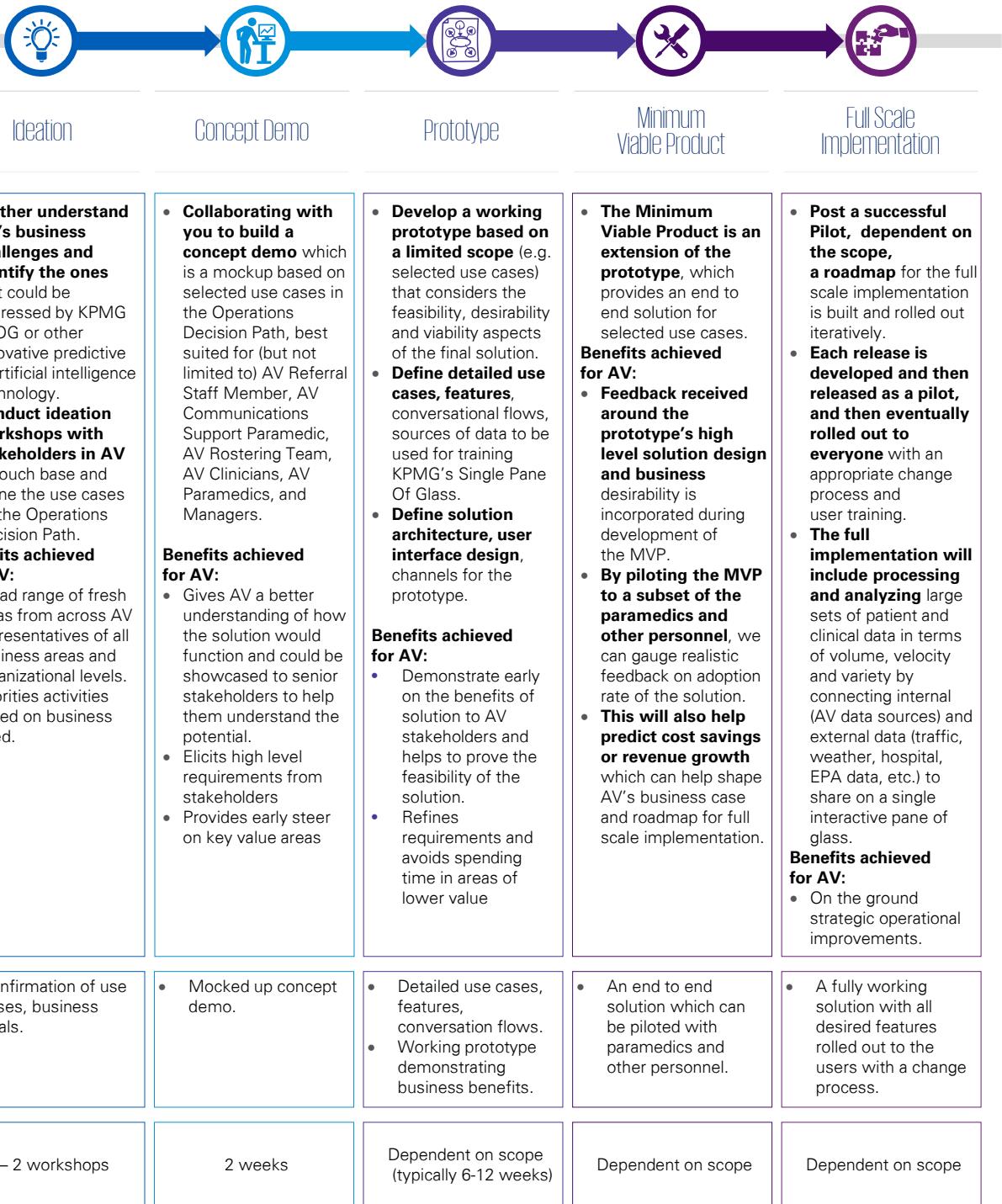
- How to pick the right chart type is for the data to bring optimal clarity
- Guidelines to ensure all visualisations are consistent across their color palettes, fonts, and layouts, dashboards fit to a single screen (single pane of glass)
- How to use colours to separate groups or to highlight points of interest
- Steps to ensure that data is not misinterpreted
- Guidelines for representing different types of data – ambulance locations,
- Letting the users play with the data (e.g. via a sand pit of sorts) and let them “see themselves” in the data and the power the insights can provide them.

7. Value Adding Initiatives

7.2. Methodologies and Accelerators

7.2.5 Advanced Analytics Framework

Using KPMG's Advanced Analytics Framework is a holistic analytics approach can be applied to ensure the implementation of a thorough and sustainable solution.



7. Value Adding Initiatives

7.2. Methodologies and Accelerators

7.2.6. Change And Communications

Bringing the entire AV workforce on the implementation journey

Effective organisational change management is a critical component to the successful implementation of the Solution and key to that is bringing AV's people along the journey.

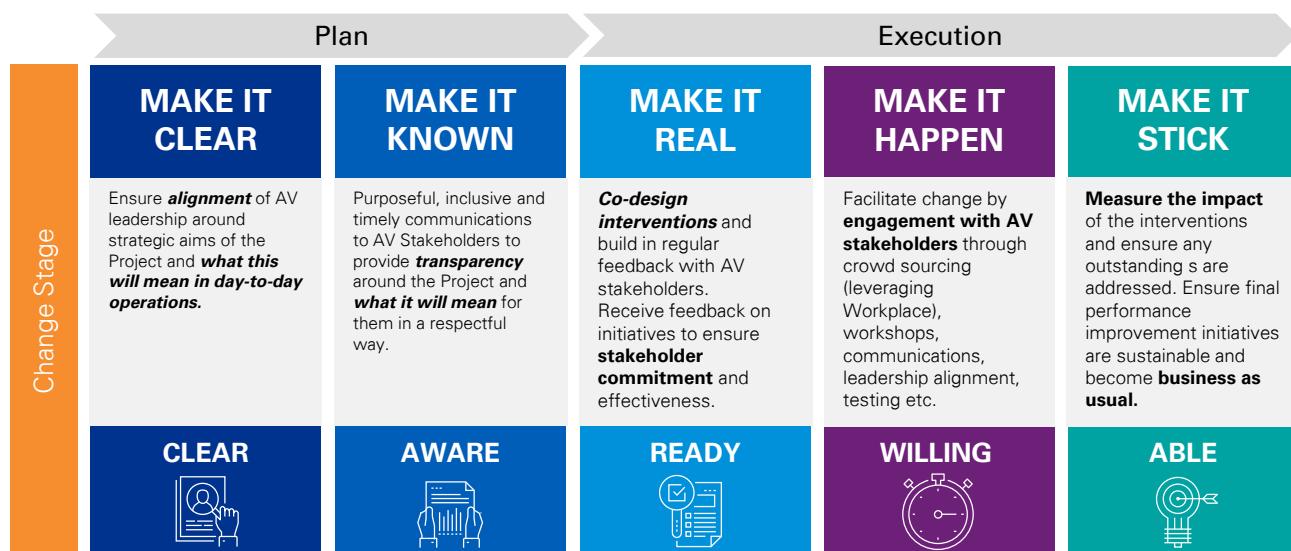
We're not changing the dynamics of your IT Team. However, we recognise as we roll out the use cases, the implementation of the SPOG solution will directly impact the way your people operate. With our passionate Lead Engagement Partner, Prashant Khanna steering our team, backed by our highly experienced people & change lead partner Stef Bradley, we will ensure we don't lose focus on your people while we implement the solution.

Our team includes change experts and our approach has embedded change management activities to ensure AV's workforce is smoothly brought on the journey. As described below:

An AV proven and known change management approach

Our change management framework helps ensure change management occurs seamlessly and effectively. In doing so, the Solution will be accepted by all AV stakeholders and users and remain sustainable over the long term.

Leveraging the good work we've done with you on the Analytics Uplift program, we will use the same change management framework (as outlined below). This ensures stakeholders are familiar with the approach, key leaders understand their roles, and further embeds a mature and consistent change process within and across the business.



Ongoing Change Leadership

Ongoing Communication and Engagement

What does good look like?

- Leadership at all levels aligned on Project's messaging and link to AV Strategy
- Leadership presents a 'united front' around the objectives and expectations of the Project.
- Shared view on what behaviours and actions are required from whom.
- AV Stakeholders understand vision of the Project and why we are changing.
- Changes and communication "weak spots" are identified so we know where to target intervention.
- Impacts of Project are clearly understood across teams. All AV Stakeholders understand what is expected by role.
- Leaders know what action to undertake based on the new reports
- Change interventions are fit-for-purpose and rolled out to Stakeholders.
- AV is guided through the new ways of working.
- Leaders (Exec / RD / GM / TM) succeed in driving the change in their teams.
- Leaders feel equipped to use the reports, know what to do with the data and undertake appropriate action when needed.
- All gaps in capability identified through analysis are addressed.
- Where change is less effective, this identified and addressed appropriately
- All leaders continue conversations with consistent messaging
- Content is embedded in inductions and paramedics know expected behaviours and actions.
- Actions are now BAU.

7. Value Adding Initiatives

7.3. Supporting You With Ongoing Innovation

We're always committed to bring the best to you to accelerate and enhance delivery and maximise innovation.

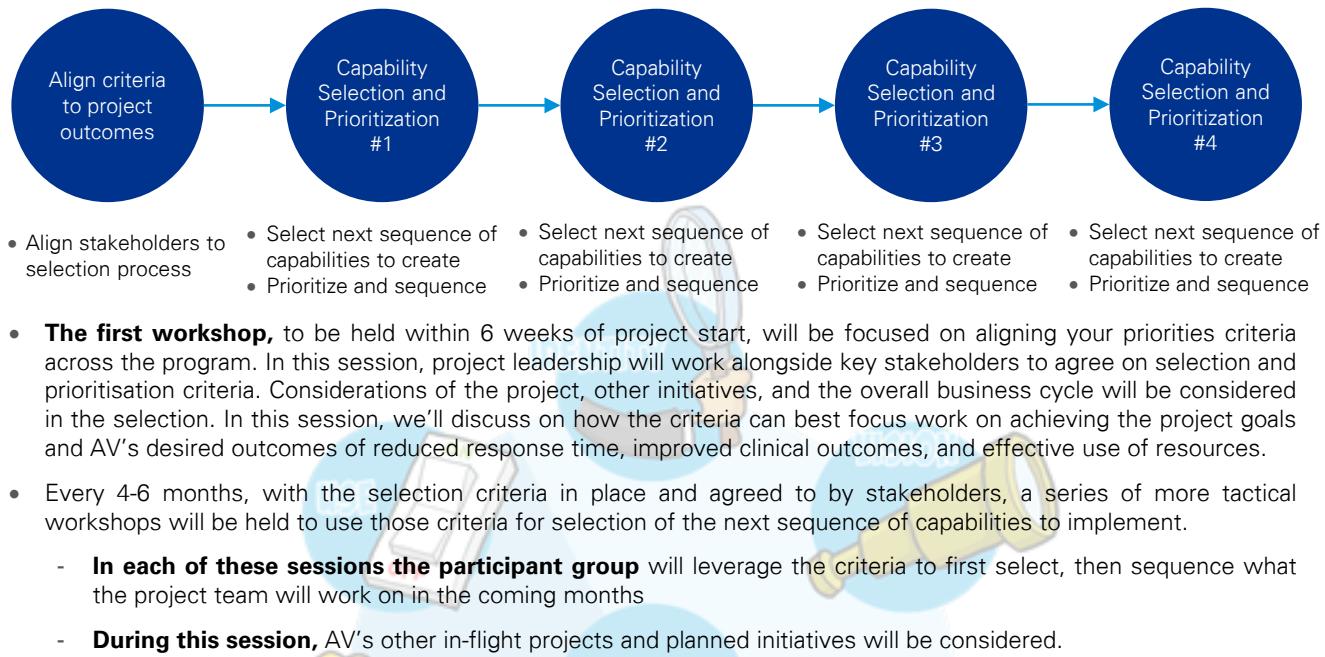
In addition to the delivery of a state-of-the-art Predictive Analytics Platform for AV, KPMG offers a wide variety of value-added initiatives, such as U-Collaborate, to bring the best of KPMG to AV. U-Collaborate is a design methodology for advanced problem solving and decision making to tackle your complex organisational and business challenges. The approach includes a robust preparation and co-design phase which culminates in bespoke workshops and events attended by multiple stakeholders, resulting in a wide variety of ideas for the Single Pane of Glass as well as the integration of this solution with other simultaneous AV projects.

7.3.1. Collaboration Office By *U-Collaborate*

U-Collaborate

Balancing and aligning stakeholder needs, priorities, resources and making the tough decisions within this program as well as across all other major AV programs (such as Health Hub, Ops Review and Insights Centre) is challenging but critical to ensure success of all projects.

To create this alignment and resolve these critical decisions, we will (as we have done with many other projects such as when we delivering the New Payments Platform), at no cost to you, use our U-Collaborate capability to establish a series of five collaboration sprints throughout the program. Each sprint workshop will have up to 25 KPMG, AV, and other stakeholder where appropriate (such as ESTA, hospitals, and the DHHS) together for **a one-day session** targeted at specific outcomes agreed and refined through a collaborative planning process for each session as outlined below.



By including a cross-initiative perspective in the sessions, AV's project work can be better aligned to the other initiatives. This avoids any conflicts across the initiative portfolio and maximize any benefits that can be obtained through alignment with those initiatives (e.g. shared use of data assets, avoidance of duplicative efforts, etc.)

What this all means for AV?

The benefits of this collaborative approach for AV and your stakeholders will get out of this approach include:

- **Creates a forum for the project team** to update and engage stakeholders on the options and dependencies
- **It then supports collaborative selection of feasible capabilities** to go into the design, build, and implement cycle.
- **By holding these sessions regularly throughout the project vs. doing one extensive sequencing** exercise at project start, Ambulance Victoria can be adaptive to new platform capabilities as they emerge and be more responsive to the changes internal and external to the organisation that can't be known at project start
- **Doing the selection and sequencing collaboratively also creates buy-in** across stakeholder groups to what the project is doing throughout the lifecycle.

8. Technology Demonstrator

Be sure to check out our **interactive** proposal microsite:

Visit: <https://ambulance.gateway.kpmg.com.au>

Password: #ambos4life



8. Technology Demonstrator

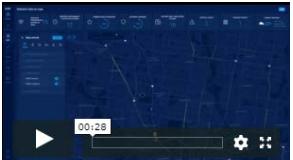
8.1. Overview of the Technology Demonstrator

KPMG defined the Technology Roadmap for Finance reporting systems in August 2018, which helped to conceptualise the Predictive Analytics Platform. Following that, we worked intimately with the AV EA and business teams to **develop the user-stories**, based on which Ambulance Victoria selected Microsoft Azure as preferred technology vendor for the platform. And while our engagement for defining the use cases ended in October 2018, **we never stopped thinking about the possibilities** for AV and what would the solution look like.

We have used KPMG's existing IP for Single Pane of Glass, together with our existing knowledge of AV's business processes, data structures, and user stories to create an Azure-based solution, where we **have already built an initial view** of the User-Stories outlined in this tender. We have referred to this solution as the "**Technology Demonstrator**" throughout this proposal.

The KPMG solution (Technology Demonstrator) is built on **Microsoft Azure platform and it is fully compliant, agile, scalable and ready to deploy** to deliver an accelerated path to success for AV. We will provide this solution, along with all the pre-built user-stories to AV on Day1 of the engagement, **free of charge**. We believe that this technology demonstrator is **a key differentiator** for KPMG's proposition for AV. With this, we have demonstrated our understanding, our forward thinking and our commitment to Ambulance Victoria.

We have created **07 videos** to cover different point-of-views, demonstrating the capability of the solution to meet the requirements for SPOG and other user-stories as listed below.

#	Title (& User Stories)	Demonstrated Capability	See it in action (Video)
1	SPOG	SPOG is a smart display that brings together different information layers integrating internal, external, structured and unstructured information. The single pane of glass is supported by the underlying analytics platform built using a comprehensive data fabric that connects a variety of data sources to help understand various pressure points on operations. It is easy to enable and disable information layers through the interactive and intuitive interface which helps to focus on a particular point of interest like traffic conditions.	
2	Call Received	As the call taker respond to the call, the dashboard shows the caller's basic information and any known past medical history. Near real-time analysis of the caller's details also flags whether the call is from a known nuisance caller. This information displayed together and in one place supports the call taker to quickly and efficiently determine the best course of action for the call. Once at the scene with the patient, the clinician can support the paramedic by monitoring a real time feed of the patient's vital signs and ECG together with a live stream from the paramedics body cam.	
3	Call Dispatched	The SPOG brings together data sources such as real time traffic cameras, and other available ambulances to assist in making informed decisions regarding the routing of crews. In the case of a major incidence response, the traffic cameras can assist in assessing the conditions of the scene before the crews arrive.	

8. Technology Demonstrator

8.1. Overview of the Technology Demonstrator

#	Title (& User Stories)	Demonstrated Capability	See it in action (Video)
4	Attend to Patient	SPOG brings together multiple sources of information in one location. Clicking on the ambulance will show an overview of crew, their status, current location and as well as any extra important information. Clicking on the patient view will bring up the patients details including their address, date of birth as well as their medical history including known conditions and medications. Clicking on a hospital will show the hospitals current as well as predicted capacity, expected wait time and other ambulances that may be on route or currently at the hospital.	
5	Operations Dashboard	In this view the duty manager gets a bird's eye view on the key indicators through an operations dashboard. This includes actual and predicted response times, wait times and bed availability as an example. The platform helps to highlight the breaches in threshold as exceptions.	
6	Management Shift	As the dispatch manager is assessing which crew to be assigned to a case, the SPOG can show different care facilities, their specialisations as well as crews that can be assigned to the case. Within this view the dispatch manager can filter based on crew status, their specialisation, potential routes and estimated drive-times to ensure that the best outcome can be achieved for the Patient as well as the crew. Once the crew is assigned, the system keeps track of the response time and predicts of a case will end up being a near miss.	
7	Emergency Management	The spog integrates multiple information sources such as updated weather from the bureau of meteorology and as well as any current known critical events such as flu outbreaks and their locations, to assist in emergency coordination and management.	

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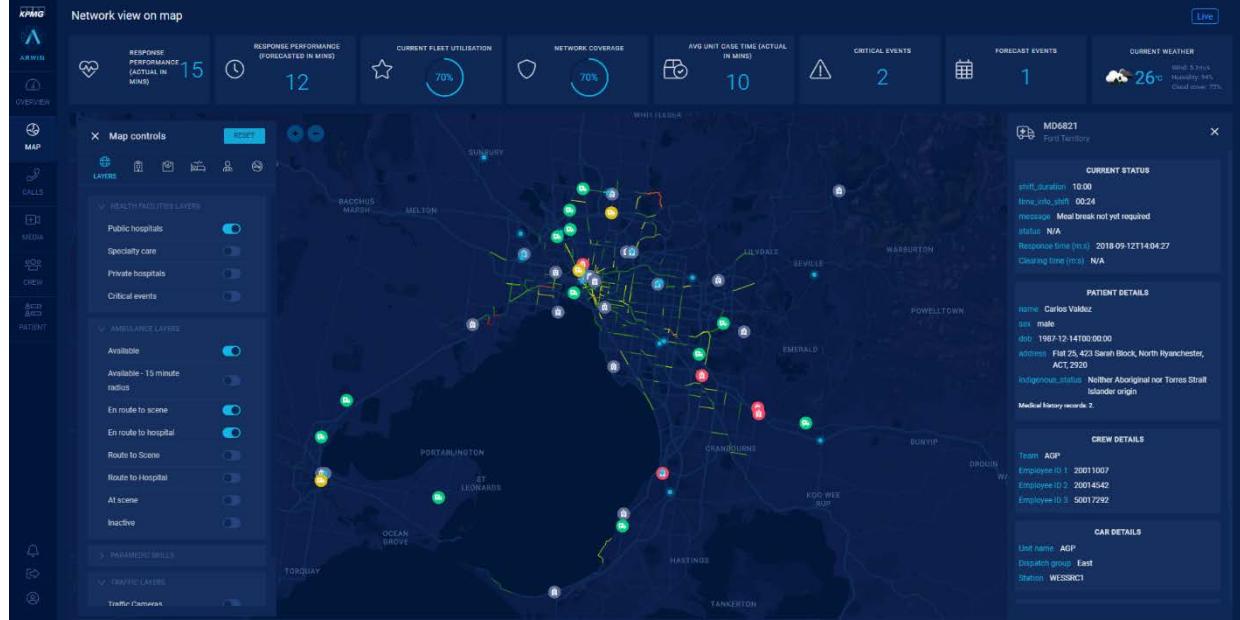


8. Technology Demonstrator

8.2. Detailed Screenshots of already built capabilities

The **screenshots** in this section show the types of visualisations and analysis that can be delivered through the Predictive Analytics Platform, which includes highly interactive spatial network visualisations showing multiple layers of information on the map (SPOG), and several other features.

Title	Single Pane of Glass – Overview
Functionality Showcased	<ul style="list-style-type: none">A map view provides a bird's eye view to track the operation rhythm of fleet and crews.The right architecture of information and correlating relevant pieces of information aids the operator in making informed decisions.Stitching together fleet (units and types), crew (optimised), traffic (condition and cameras), weather, facilities and health care providers information and, more importantly, relevant patient details in one compact view.The types of controls on the map to include: each layer's visibility, filters, map selection, side panel selection (fly to location on map), and any given point's detailed right side panel.The side panel card views and widgets to have the ability to link to detailed (centric) views designed for each particular type of layer (as needed).



8. Technology Demonstrator

8.2. Detailed Screenshots of already built capabilities

Title	Patient Centric View
Functionality Showcased	An assembly of patient details as (to be) gathered from primary identifiers, historical and recent interactions with patient and myHealthRecord.

The dashboard displays a map of Melbourne with several green dots representing patient locations. Key performance indicators include:

- RESPONSE PERFORMANCE (ACTUAL IN MIN): 15
- RESPONSE PERFORMANCE (FORECASTED IN MIN): 12
- CURRENT FLEET UTILISATION: 70%
- NETWORK COVERAGE: 70%
- Avg UNIT CASE TIME (ACTUAL IN MIN): 10
- Critical Events: 2
- Forecast Events: 1
- Current Weather: 35°C

PATIENT DETAILS

MEDICAL HISTORY

Diagnosis	Date	Comment
Scabies	1906-03-17	
Asthma	1927-01-26	
Tuberculosis	1919-03-04	

MEDICATIONS

Medicine	Dose Count	Dose Frequency
Furosemide	2	daily
Cimetidine	2	hourly
Flucloxacillin	3	daily

AUTHOR DETAILS

PATIENT DETAILS

CREW DETAILS

CAR DETAILS

Title	Hospital Centric View
Functionality Showcased	Hospital (clinic and health provider facilities) includes services, predictive wait and clearing times.

The dashboard features a map of Melbourne with yellow lines indicating traffic flow and red dots representing hospital locations. Key data points include:

- RESPONSE PERFORMANCE (ACTUAL IN MIN): 15
- RESPONSE PERFORMANCE (FORECASTED IN MIN): 12
- CURRENT FLEET UTILISATION: 70%
- NETWORK COVERAGE: 70%
- Avg UNIT CASE TIME (ACTUAL IN MIN): 10
- Critical Events: 2
- Forecast Events: 1
- Current Weather: 28°C

Royal Women's Hospital, The

ED WAIT TIME (ACTUAL VS. TARGET)

PATIENT ED ATTENDANCES FORECASTS

PATIENT WAIT TIME

CURRENT WAIT TIME (MIN)	FORECASTED WAIT TIME (MIN)
37 Mins	20 Mins

AMBULANCE STATS

WAITING AMBULANCES	INBOUND AMBULANCES
3	2

CURRENT RAMPING TIME

FORECASTED RAMPING TIME

8. Technology Demonstrator

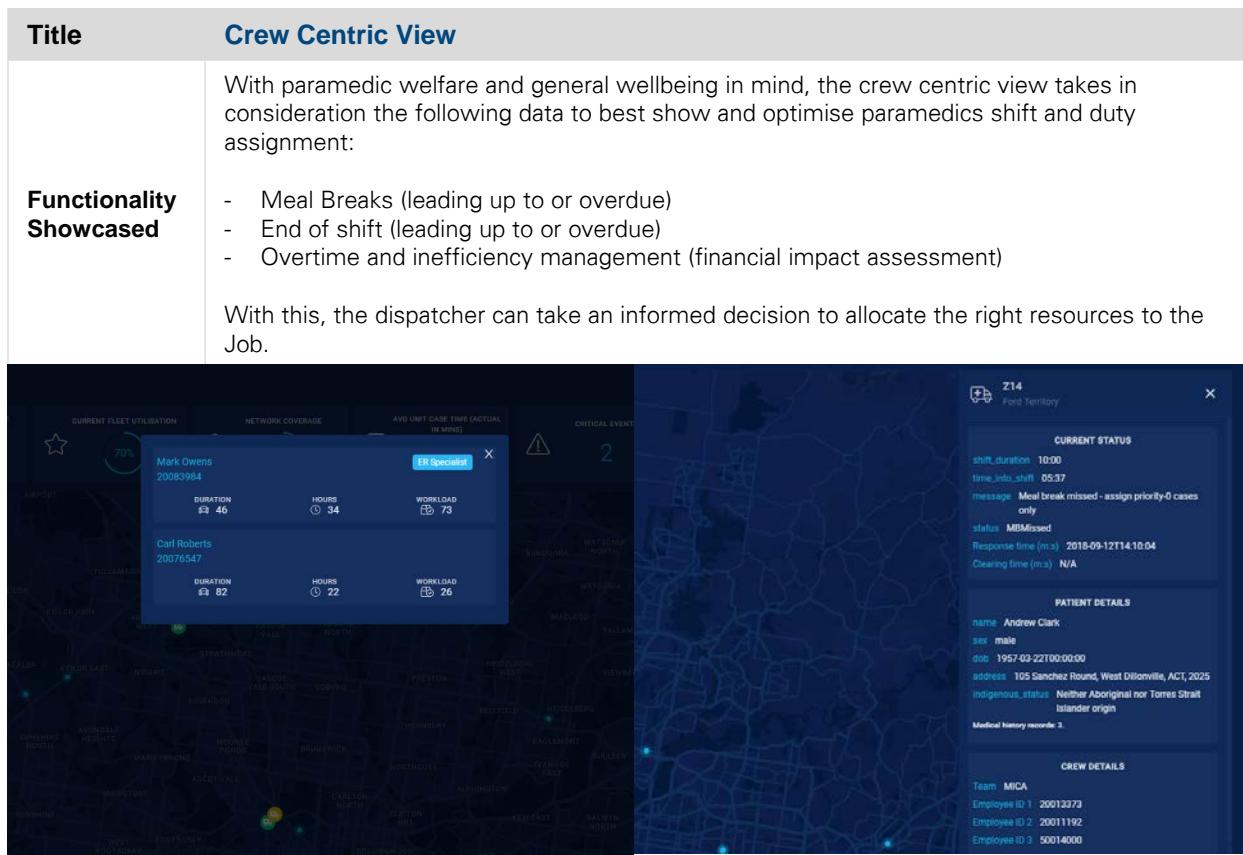
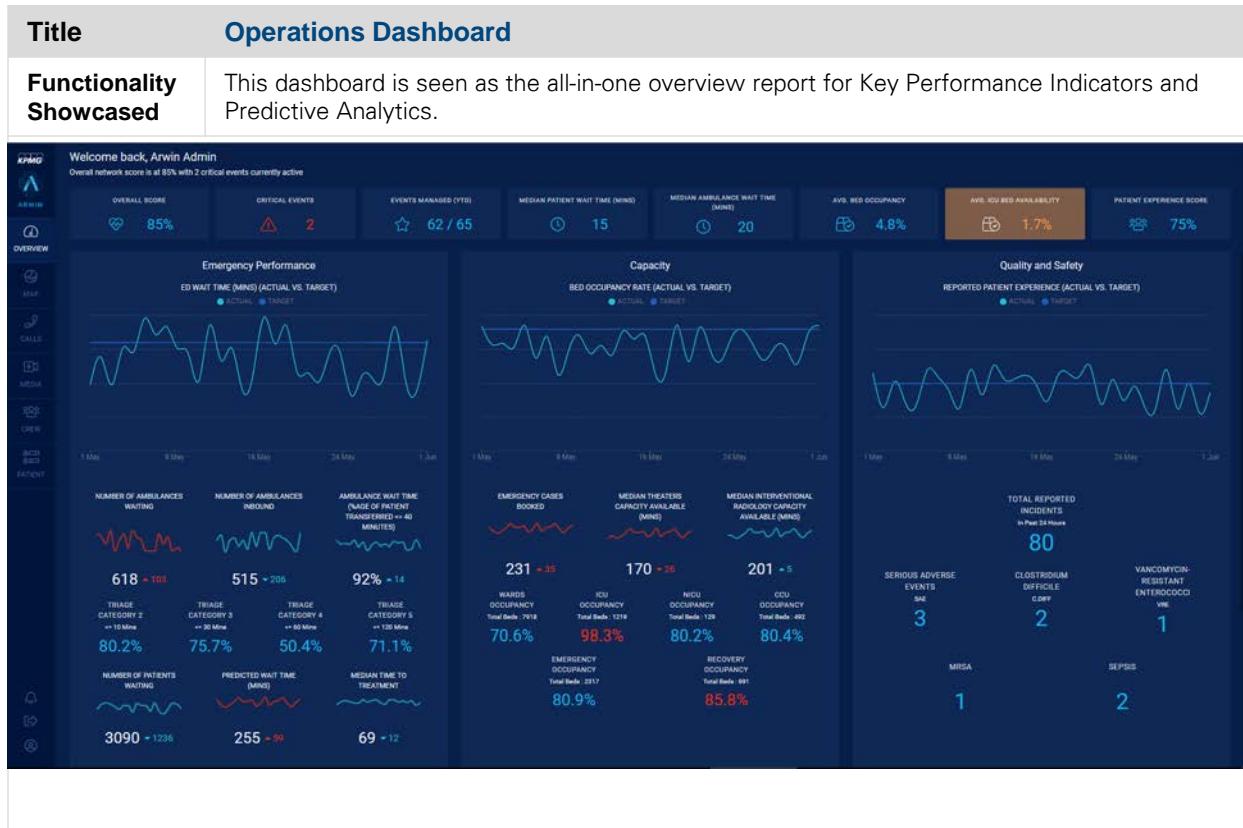
8.2. Detailed Screenshots of already built capabilities

Title	Communications Centric View
Functionality Showcased	<p>As the call taker responds to a call, the analysis will kick-in in near-real time through the "Call-Taker-Dashboard" and will conduct an "early identification" of nuisance callers by tagging phone numbers, names, addresses and past interactions (CAD and VACIS) to flag a repeated nuisance caller.</p>

Title	Integrating Audio and Video
Functionality Showcased	<p>With the availability of additional media sources like audio and video, incorporating these along side a case or a patient profile, has become a necessity for improving outcomes for both the patient and the paramedic.</p>

8. Technology Demonstrator

8.2. Detailed Screenshots of already built capabilities



9. KPMG's Technology Partners - Letters of Support

Be sure to check out our **interactive** proposal microsite:

Visit: <https://ambulance.gateway.kpmg.com.au>

Password: #ambos4life



9. Letters Of Support

9.1 KPMG has the support of Microsoft



Microsoft
Level 5, 4 Freshwater Place, Southbank Victoria 3006

Mr Prashant Khanna
Partner, Innovation, Digital & Data – KPMG
Tower Two, Collins Square, 727 Collins Street
Melbourne, Victoria 3008

22nd January 2019

Ambulance Victoria Predictive Analytics Platform Project RFT 1958

I am writing to confirm that Microsoft Corporation is very happy to support KPMG as a global strategic alliance partner with this tender, specifically in the following areas:

- Advice on Azure cloud based computing, products & services
- Advice on best practices
- Advice on emerging trends in the marketplace
- Advice on technology product roadmaps, a view to emerging features
- Advice on architecture and engineering
- Ongoing training & support
- Sharing of go to market product accelerators
- Where permissible, sharing of relevant reference site collateral

We look forward to assisting you in this vitally important project in any way we can.

Sincerely,

A handwritten signature in black ink.

Rod Nirens

Account Director – Victorian Health
Office: +61 3 9286 3295 Mobile: +61 411 33 0000
rodney@msn.com

9. Letters Of Support

9.2 KPMG has the support of Informatica



Informatica Asia/Pacific Headquarters
Level 5, 255 George Street
Sydney
N.S.W. 2000
Australia
Tel: +612 8907 4400
Fax: +612 8907 4499
General Inquiries: info-au@informatica.com
Web: <http://www.informatica.com/au>

Attention of Mr Prashant Khanna,
Partner, Innovation, Digital & Data
KPMG
Tower Two, Collins Square, 727 Collins Street, Melbourne, Victoria 3008
Phone +61 3866 38300
E-mail prkhanna@kpmg.com.au

Dated: 21.1.19

Ambulance Victoria Predictive Analytics Platform Project RFT 1958

I am writing to confirm that Informatica is very happy to support KPMG with this tender, specifically in the following areas;

- Advice on Informatica computing, products & services on Azure
- Advice on best practices
- Advice on emerging trends in the marketplace
- Advice on technology product roadmaps, a view to emerging features, and access to preview products
- Advice on architecture and engineering
- Training & support
- Sharing of go to market product accelerators
- Where permissible, sharing of relevant reference site collateral

We look forward to assisting you in this vitally important project in any way we can.

Sincerely,

Andy Edmonds | Channel Account Manager *A. Edmonds*

459 Collins Street, Melbourne, VIC, 3000

Mobile: +61 478 701 906

Email: aedmonds@informatica.com

10. Detailed CVs

Be sure to check out our **interactive** proposal microsite:

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Password: #ambos4life





Prashant Khanna

Engagement Partner

Partner

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Tower Two, Collins Square
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Melbourne, VIC 3000 Australia
+61 3 9288 6463

Function and Specialisation

- Information Management
- Big Data & Emerging Data Management Trends
- Data Analytics & Reporting
- Business Performance Management
- IT Transformation
- Finance Transformation

Overview

- Prashant is KPMG's National Service Line Lead for Analytics and Information Management with over 18 years of experience in the Information Management, Analytics and the Insights Delivery domain. He has significant project experience leading teams with core-responsibility for assessing, designing and implementing analytics solutions across a diverse range of business environments.

Relevant Experience

- Child Protection Data Linking and Insights (Victorian Department of Health and Human Services) – Prashant led the Child Protection Data Insights engagement for Victorian Department of Health and Human Services which included building a technical solution in their environment to bring together critical information and improve understanding of the risks and opportunities for children in Child Protection.
- Development of Victorian Public Schools education dashboards (Victorian Department of Education and Training) – Prashant's team worked closely with the Department to design, build and test the Victorian Public Schools Panorama Dashboards that allow school principals to view a variety of performance indicators on interactive online dashboards. The dashboards integrate internal data (enrolments, absences, AusVELs/Victorian Curriculum), external data (VCE, NAPLAN) and survey data (student attitudes to school survey, school staff survey and parent opinion survey) into a series of relevant and contextualised visualisations which allow schools to compare their performance over time, as well as benchmark themselves against a cohort of similar schools. Access is provided through a secure web portal, available on the DET corporate intranet.
- Refresh of Victorian Energy Compare (Victorian Government) – Prashant and his team delivered a refresh of the Victorian Government's independent energy market comparator – Victorian Energy Compare (VEC) <https://compare.energy.vic.gov.au/>. The online tool developed allows consumers to find and compare electricity and gas retailer offers to understand the offers best suited to their consumption patterns.
- Prashant has assisted the Victorian Government in the inception of the whole-of-Victoria electricity smart meter data hub that will provide a central governed access-point for all consumer and authorised third-party data access. The intent of the consumer data hub is to provide a mechanism for greater consumer participation in the energy market, data-sharing economies of scale and establishes the foundation for future innovation through energy "overlay services" to increase consumer benefit.
- National Roadmap for the Electronic Recording and Reporting of Controlled Drugs (DoH Federal) – Prashant lead a team responsible for the development of the National Roadmap for the Electronic Recording and Reporting of Controlled Drugs (ERRCD). The team had a broad scope of consultation with the relevant stakeholders - State and Territories, the Commonwealth Department of Health, the incumbent software vendor, and the Medical Software Industry Association – to arrive at a conformed roadmap that will allow for the real-time capture, analytics and reporting of dispensing and classified drug monitoring across Australia.
- Business case for the Trusted Information Platform (Victorian Department of Health and Human Services) - Prashant was involved in the specification of the business case and project initiation stages of a large scale data warehouse initiative to deliver a "Trusted Information Platform" within DHHS VIC. During this project, he worked with the Executive sponsor and Program lead to define the scope, objectives, benefits, risks, solution map, detailed costing and project planning for this whole-of-department initiative.



Anthony Coops

AV Data Analytics Relationship Partner

Partner in Charge

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 Melbourne, VIC 3000 Australia
 +61 412 291782
 acoops@kpmg.com.au

Function and Specialisation

- Analytics

Education, Licences & Certifications

- Bachelor of Business, Royal Melbourne Institute of Technology
- Associate, Institute of Chartered Accountants Australia
- 2012 Graduate Williamson Community Leader Program
- Certificate III, Investigative Services
- Certificate IV, Government (Investigation)

Overview

- Anthony is a Partner at KPMG, focusing on data and emerging technologies
- Anthony brings the best of KPMG's data and advanced analytics capabilities and emerging tech such as Blockchain, Artificial Intelligence and Automation.
- In Anthony's AsPac and global lead roles, he is connected to KPMG's latest investments and strategic initiatives in these areas - this means that you will get insights from all the work we have undertaken across the world so we don't waste your time and we have experts that are relevant to you when you need it

Relevant Experience

- Anthony leads the data and advanced analytics and emerging technologies teams such as Blockchain, Artificial Intelligence and Automation - which is on leveraging data to make better decisions.
- Anthony's focus is:
 - Lead on engagements across a wide range of industries including the big 4 banks, education and major government departments
 - Leveraging KPMG solutions to help our clients make better decisions including customer growth (Footprint 360), regulatory compliance (Policy bot and conversation assistant) and Control Rooms (Arwin)
 - Driving the analytics community including:
 - Crime - hackathon focusing on four areas around predicting crime patterns, creating geographic references for incomplete and missing location data, dispatch (call out) efficiency and external data sources for enrichment and insight (concert schedules, weather, at social demographic)
 - Saving lives - the first ever Ambulance Victoria "AI"athon predicting demand in the ambulance network and optimizing emerging department selection
 - Sports Analytics - founding sponsor of and the Sports Analytics world series <https://www.analyticsinsport.com/>
 - Having worked on projects in the USA, Russia, UK, China, Singapore and New Zealand, Anthony brings a global perspective and the best of KPMG to our clients



Stefanie Bradley

People and Culture Partner

Partner in Charge

KPMG Melbourne
Tower Two, Collins Square
727 Collins Street
Melbourne, VIC 3000 Australia
+61 3 9838 4603
sbradley1@kpmg.com.au

Function and Specialisation

- ...

Education, Licences & Certifications

- Master of Organisational Psychology, Griffith University, Queensland.
- Honours in Bachelor of Arts (Psychology), Queensland University.
- Senior Mentor for the Rotary Leadership Development Program with VicPol
- Guest lecturer on organisational design and change management at the University of Queensland and Griffith University.
- Advisor for the Society of Evidence Based Policing

Overview

- Stefanie is the Partner in Charge for KPMG's People and Change practice and has national and international experience as a management consultant. Stefanie has over 15 years' experience in organisational transformation, change management, strategic human resource consulting, finance and human resources business process re-engineering and systems implementation projects in Australia, New Zealand and the United States. She has covered a broad number of senior roles including the change manager for several complex system implementation projects in the US and Australia, project manager for human resources organisational and strategy reviews, and project director for process improvement initiatives.

Relevant Experience

- Ambulance Victoria:** Stefanie has been working with the Data and Analytics team within AV advising them on creating a collaboration mindset and culture to better service the business and operations support.
- South Australia Police:** Stefanie has been working with the SAPOL Executive Leadership team for over two years, facilitating the design and integration of their People, Operations and Technology strategy to align with SAPOL 2020.
- Australian Federal Police:** Stefanie was the lead partner working with the AFP to develop their workforce model for the future, and led the development of a workforce strategy; strategic workforce plan including demand drivers for the AFP; the design of a workforce model; and the development of a road map for implementation.
- Western Australia Police:** Stefanie was the lead strategic Advisor for the Frontline 2020 Reform Program responsible for the program governance and reporting strategy for the program.
- Department of Justice, Emergency Management Victoria (EMV):** As part of the Emergency Management White Paper Review, KPMG were engaged to redesign EMV and its operations and identify the capability requirements for the new organisation. Stefanie was the lead change advisor on this engagement reporting to the CEO of EMV and The Victorian Fire Services Commissioner, Craig Lapsley.
- Department of Justice, Emergency Service Telecommunication Authority (ESTA):** Stefanie led the review of ESTA's call centre workforce strategy review which was part of the existing KPMG internal audit work.
- Queensland Fire and Rescue, Department of Emergency Services (Qld):** Human Resources Strategy and Processing Reengineering - Led and managed human resources process redesign for a State Government Agency within Australia.



Anuj Solanki

Program Director & Lead for Demand Management & MDM

Director

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Function and Specialisation

- Data and Analytics Strategy
- Cloud Analytics Platforms
- Data Engineering and Integration
- Analytics Solution Architecture
- Enterprise Architecture
- Master Data Management
- Data Governance
- Data Quality Management
- Data Warehousing
- Reporting and Visualisations

Education, Licences & Certifications

- MBA (Information Technology)
- Bachelor of Science (Information Technology)

Overview

- Anuj Solanki is a Director with KPMG's Management Consulting Practice with more than 14 years of experience in managing complex, data-centric transformations for large corporations.
- Anuj has the experience of managing and growing the regional Data and Analytics teams for one of the largest global consulting firm.
- Anuj has a passion for information architecture and Information sciences; he adopts a hands-on approach to deliver a variety of services including Cloud data Platforms, Business Analytics, Information Management, Enterprise Architecture, Performance Management and other CIO advisory and implementation services.
- Anuj has led several full life-cycle implementations including technical and function consultation across technology platforms such as Microsoft, Oracle, IBM and SAP.

Relevant Experience

- **Ambulance Victoria:** Team leader for delivering the data governance and member of the Analytics uplift program working across 6 different programs of work.
- **Victorian transport sector client:** Engagement director for the implementation of a data hub and a Single Pane of Glass (SPOG) solution for managing telecommunication assets.
- **Australian Superannuation Client:** Engagement Director for the deliver of Microsoft Azure based data and analytics platform.
- **Large Australian superannuation fund:** Director for the design and architecture of a Microsoft Azure based Enterprise Data Warehouse solution.
- **Government Healthcare Agency:** Data Architect and Engagement Director for an Information Modelling and Data Warehouse improvement project.
- **Telecommunications operator:** Data Analytics Leader and Engagement Manager for defining the Data and Analytics Strategy and Roadmap.
- **Large wholesale telecommunications provider:** Team leader for a data-centric transformation focused on scaling data and improving data quality.
- **Defence Agency:** Analytics Team Leader and Engagement Director for definition of Procurement & HR Analytics Framework.
- **Manufacturing Vietnamese conglomerate:** Program Director for the implementation of an integrated DW and reporting solution for the client



Leo Kozhushnik

Director for Solution Architecture and Integration

Associate Director, Data & Analytics

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Function and Specialisation

- Data & Analytics Strategy
- Cloud Analytics Platform Delivery
- Business Requirements Elicitation
- Business Process Optimisation
- Cloud Solutions Architecture, Analytics Solution Architecture, Enterprise Architecture, Data Architecture, Network Architecture
- Data Engineering, Data Integration, Data Transformation
- Data Warehousing, Database Management
- Data Modelling and Architecture
- Microsoft Azure – Architecture, Data Integration, MSSQL Server Database, MS Power BI

Education, Licences & Certifications

- Masters of Business Analytics, Deakin University
- Graduate Certificate of Project Management, Swinburne University
- Bachelor of Information Management & Business Systems, Monash University
- Microsoft Big Data Analyst XSeries Program

Overview

- Leo is a an IT professional with more than 19 years' experience managing operational and project teams, and providing solution architecture with the main focus on BI, Data Warehousing, Data Lakes, Data & Analytics across a broad range of corporate & government clients. Leo has a passion for data driven solutions including Machine Learning and AI, and extensive technical expertise across different technologies with advanced understanding and in-depth knowledge of industry-leading trends and the ability to deliver outstanding tangible results focused on operational efficiency, strategic objectives, client exceptions and information management & data road map.

Relevant Experience

- **Department of Health and Human Services (DHHS), Real-Time Health Emergency Monitoring System project** – Architected and led a delivery team for Phase 3 of RHEMS solution which is built on Azure Cloud that enables monitoring of Emergency Department Presentation across the state in Real-Time. Dashboard & SMS/email alerts used to trigger when presentation threshold breach, enabling Emergency Control personnel to direct mission critical action. The project was recognised for Big Data Innovation of the Year 2018 – VIC.
(<https://www.aiia.com.au/awards/about/2018-winners-and-merits/2018-victorian-winners-and-merits>)
- **Department of Health and Human Services (DHHS), Winter Impact reporting project** - Leveraging existing Thunderstorm Asthma solution (RHEMS) engaged Leo to deliver three (3) reports to ensure the department is well placed to monitor real time changes in winter illness levels and the impact on health services.
- **Department of Education & Training (DET)** – Leo was responsible for leading Information Management Platform capabilities solution architecture and IM Platform Roadmap for Enterprise Architecture project.
- **Mercedes Benz Financial Services** – Leo was engaged to lead the Architecture and Governance across Financial Services Reporting; developing and maintaining a backlog of deliverables and maintaining a sustainable cadence to deliver mission critical Financial reports. Part of the engagement, Leo has assisted with setting up an Agile delivery framework
- **South East Water** – Leo led the Power BI Framework development for enterprise Power BI adoption pathway to create a decentralised report delivery model for enabling SEW to meet self-service reporting needs.



Mark Geels

Director for Data Science and Analytics Delivery

Director

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Function and Specialisation

- Data & Analytics Strategy
- Business Requirements Elicitation
- User Storyboarding for Analytics
- Business Process Optimisation
- Data Science, Machine Learning & AI
- Management Reporting & Dashboards
- Data Visualisation
- High-Res Custom Visualisations

Education, Licences & Certifications

- Chartered Accountant
- Bachelor of Business (Accountancy), RMIT University, Melbourne
- Agile Scrum Master
- Prince 2 practitioner

Overview

- Mark is a Director and Chartered Accountant and has worked for KPMG for over 15 years, managing a wide variety of Data Analytics and Information Management engagements. Mark works shoulder to shoulder with his clients using a range of advanced analytics techniques to uncover actionable insights from all types of data, and has worked around the world to successfully lead and deliver many complex, large-scale projects. Mark has chaired national data analytics conferences and recently presented at a global artificial intelligence conference in Boston.

Relevant Experience

- **Analytics Uplift Program (Ambulance Victoria)** - Mark has been leading the multi year AV Analytics Uplift program since its inception in March 2017. In that time he has worked across almost all areas of the organisation, from emergency operations, to finance, and from clinical to patient transport. Mark has helped lead the introduction of the AV agile delivery model and has delivered new advanced analytics and geospatial techniques to deliver new insights to managers and paramedics on metrics that were never previously possible. This required working between AV and ESTA to collaborate on joining internal and external data sets while working in parallel on the overall development of the analytics strategy and roadmap. Mark recently worked on the development of the myParamedic performance app prototype which included connecting paramedic level EDW performance data with AV's Azure services to deliver a working prototype smartphone app to a set of paramedic users. He also executed a global KPMG hackathon on AV data and is currently working to set up a secure data exchange between AV and hospitals to help close the loop on paramedic performance.
- **Reduction of fraud (WorkSafe)** – Mark was recently engaged by WorkSafe to help reduce the occurrence of insurance fraud. Mark worked with WorkSafe's data architects, Data Warehouse DBAs and the business to implement a Qlik Sense and R / SAS solution to monitor, detect and predict fraud by intelligently identifying known fraud indicators across every claim and flagging transactions for follow-up



Gerard Barclay

Demand Manager

Associate Director

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Function and Specialisation

Information Management & Business Intelligence delivery:

- Business Requirements Elicitation
- Data Modelling and Architecture
- Management Reporting and Dashboards
- Master Data Management
- Agile Project Management

Education, Licences & Certifications

- Chartered Accountant
- Bachelor of Commerce, Bachelor of Information Systems
- Prince2 Certified Practitioner
- ITIL Certified Practitioner (fundamentals)

Overview

- Gerard has 10 years experience in delivering data projects for KPMG clients, acting as a delivery manager across Performance Reporting and Information Management (Governance) projects.
- Gerard often supports KPMG's Agile teams as Scrum Master, experienced in leading the continuous status and estimation updates that Agile requires from the Scrum Team. He has a Government and Financial Services sector focus for these Agile team projects
- Gerard brings recent and direct involvement in completing multiple Ambulance Victoria Analytics Uplift data projects across 2017-19. Outside of AV, Gerard has recent involvement in transformational projects (DW introduction, ERP replacement) that spans preparing data strategy, implementing governance structures & operating models, and in assessing data readiness for migration.

Gerard's accountancy & IT background supports him in coordinating the achievement of client outcomes with industry standard guides:

- Setting technology strategy, design and requirements for data, to implement DAMA DMBO&K & Mike 2.0 compatible results (data capture, governance, quality, warehousing, reporting & analytics)
- Assessing, defining & establishing governance structures and operating models (per CMMI and KPMG Advanced Data Management frameworks) to address information ownership and data quality.

Relevant Experience

- **Ambulance Victoria** – delivering project within Analytics Uplift:
 - Building new Performance for AV Operations in EDW & OBIEE – using ESTA CAD & AVL data
 - Leading the KPMG team for design, data assessment and analysis when introducing the Resource Dashboard – using ETCS & CAD.
 - Facilitating Agile analytics Sprints in a Scrum Master role.
- **Victorian Government Regulator:** Using Kimball dimensional modelling to deliver star-schema based DW designs, built in Azure-ready ETL's (and ELTs) in SQL Server Integration Services
- **Commonwealth Government:** Authoring a Program Data Strategy and implementation plan for the data stream of an ERP transformation (SAP S/4 HANA). The planning scope was large as the client is replacing 500+ application with a strategic ERP systems. Gerard assisting the planning and design of Data Migration, Data Quality operating models and delivery structures.



Lachlan Hardisty

Delivery Manager and Scrum Master

Manager

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Function and Specialisation

- Agile Project Management
 - Business Requirements Elicitation
 - Strategic Statistical Analysis
 - Management Reporting and Dashboards
 - Operational & Financial Analysis
 - Financial Architecture
- Education, Licences & Certifications**
- Bachelor of Commerce, Monash University (Major in Finance, Minor in Econometrics).
 - Chartered Accountant
 - Certified Agile ScrumMaster

Overview

- Lachlan is a skilled Scrum Master and Financial, Statistical and Strategic Analyst with strong background in Finance and Econometrics.

Relevant Experience

- A Big 4 Bank – Managed a capability uplift program for the internal audit department, including operating as an agile scrum master, running advanced analytics innovation sprints in Natural Language Processing, and building self serve dashboards, in SQL, R, python and Tableau.
- A Big 4 Bank – Managed the build of a workforce management solution that granularly and in real time analyses the supply and demand of any given resource pool in the across the lending, servicing and sales services for Business and Private banking front line leveraging predictive modelling and machine learning, in SQL, R and Tableau.
- A Big 4 Bank – Managed the build of a work effort forecasting and visualization tool in SQL, R and Tableau, querying and basing the solution in GDW, in order to support strategic decision making, identify hot-spots for operational improvement, and form a full picture of the demand on resources across the entire business bank.
- A Big 4 Bank Transformational Program – Provided advice to major change implementation, strategic modelling and analysis, and deep dive analytics, advising key stakeholders on appropriate project rollout plans, supporting analysis and reporting, and benefit realization.
- A Big 4 Bank Customer Servicing Area – Build an Excel based Visual Management Dashboard for tracking of key statistics and processes within the Business Banking Fulfilment Centre, to inform in-day decision making from team leads.
- A Major Telecommunications Company – Lead the building of a business case for a major organizational transformation, including data gathering, assumption proving, logic construction and presentation of outputs to major stakeholders.
- A National Government Disability Program – Built an Activity Based Costing Model with the ability to predict the funding requirements of individuals expected to enter the program, and aggregate to a state level for use in bilateral agreements between the Federal and State Governments



Jakob Govendir

MDM Lead

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Function and Specialisation

- Data and Analytics Strategy
- Master Data Management
- Data Governance
- Data Quality Management

Education, Licences & Certifications

- Bachelor of Engineering (Mechanical – Hons. 1) UNSW
- Graduate Certificate in Science and Technology (Statistics) UNSW

Overview

- Jakob is a data scientist with a broad range of cross-industry experience, including banking and finance. He has several years of analytics experience within a professional services setting and can deliver value across a range of industries and technical capacities. Jakob can develop bespoke code assets, statistical models and data integration layers in a range of technologies when needed, but is also adept at applying off-the-shelf solutions. He blends statistics, big data and advanced analytics in order to find insights for clients which can assist them to improve outcomes for their stakeholders.

Relevant Experience

- Spearheaded marketing model development at a large, diversified financial services organisation. Developed, validated and deployed advanced share of wallet models in R, integrating with a Redshift data mart on the Amazon cloud.
- Excel Macro SME on an engagement to integrate an Excel calculation engine with a SQL database to perform tactical pay and entitlement scenario analyses for a NSW Government department during an Enterprise Bargaining Agreement (EBA) negotiation.
- Data Analytics SME on a financial statement audit of a mid-sized Australian bank. Performed geospatial analytics of lending and loan impairment data to determine geographic and industrial lending concentration/. Performed whole-of-bank interest recalculation.
- Developed an Excel tool for a NSW Government department to visualize a large, multi-dimensional dataset which was too large to fit in Excel. Used MS Access as a data storage layer and dynamically populated the relevant data into Excel using dynamic SQL and VBA.
- Performed data quality remediation and developed ongoing quality monitoring dashboards for a Victorian government agency.



Sanko Pita

MDM Specialist

Manager

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Function and Specialisation

- Data and Analytics Strategy
- Master Data Management
- Data Governance
- Data Quality Management
- Data Migration (ETL)
- Data Warehousing
- Data Architecture and Analysis
- IT Project Management
- Business Requirements

Education, Licences & Certifications

- Master of Business and Information Technology
- Bachelor of Information Systems
- Bachelor of Arts

Overview

- Sanko is a Manager in KPMG's Management Consulting division with 8 years of professional IT experience. Sanko has performed various roles across the delivery lifecycle on large scale systems implementation programs, with a focus on Datawarehousing and Business Intelligence.
- Sanko's roles and experience include business requirements analysis, solution design and change management where he has demonstrated a detailed understanding of program delivery mechanisms and processes.
- Sanko has developed a delivery background across different areas of the project lifecycle and is experienced with areas of stakeholder management and combining this with a detailed understanding of underlying architectures, technology solutions and systems.
- Sanko has extensive experience with large scale data migration and data warehousing projects. He has held various roles in the data migration space which include: ETL Lead, ETL development (Datastage/SSIS), testing, source to target data mapping and requirement gathering.
- Sanko is an excellent communicator and has a demonstrated ability to develop action plans and execute with clients and stakeholders.
- Sanko's formal studies include a Masters of Business and Information Technology at the University of Melbourne

Relevant Experience

- **Major Advertising Corporation – Data Warehouse & Business Intelligence Implementation:** Sanko has played a critical role as the Datastage ETL lead/ Deployment Manager in the Information Hub project. This project has harmonised a range of high volume and complex data sources over many subject areas into a cohesive information resource for operational, management reporting and analytical purposes.
- **Large Electricity Retailer– Data Migration:** Sanko has assisted the client data migration program by:
 - Developing an interim CRM functional specification to support the rollout of Oracle CRM on Demand by engaging key business stakeholders.
 - Modelling and optimising business processes to support data migration activities
 - Data migration test team supervision, providing guidance on test methods and business logic
 - Developing and managing the data migration status reports to provide executive leadership visibility of the project
- **Large Government Department – Data Cleansing:** Sanko was part of the data cleaning program. Sanko assisted in advising the client on the best practice approach to be taken in regards to data cleaning. Sanko designed the data cleaning engine using Microsoft SSIS that was used across 10 different institutes to provide cleaning reports and cleansed data.



Krishna Nadimpalli

Architecture Lead

Associate Director

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Function and Specialisation

- Data and Analytics Strategy
- Business Process Optimisation
- Business Requirements Elicitation
- Cloud Solution Architecture
- Analytics Solution Architecture
- Enterprise Architecture
- Data Architecture
- Master Data Management and Data Governance

Education, Licences & Certifications

- Chartered Accountant
- PRINCE2 Project Management foundations
- LEAN process analysis fundamentals
- ITIL v3 foundations
- Bachelor of Information Systems / Business (Accounting)

Overview

Krishna is an experienced Manager in the Business Intelligence and Analytics practice with over eight years experience in BI Strategy, BI Target Operating Model development, Data Governance and Data Management. He possesses strong business analysis skills particularly around documenting business and functional requirements, data mapping, data modelling and process analysis.

Krishna has managed projects across a range of industries including Government, Financial Services, Utilities and Telecommunications.

Relevant Experience

- Krishna developed an analytics strategy for the pricing function of a large Australian telecommunications provider detailing the target end state vision, gap analysis to current state, key analytic requirements and capability development areas. The target end state vision required consideration of the client's current technology environment which consisted of SQL Server and a variety of end-user reporting tools which were used for analytic and enterprise reporting purposes. He built a 12 month roadmap highlighting capability areas that required development and investment.
- Krishna helped design and implement a data governance framework at a large Australian bank, working closely with data architects and data stewards.
- Krishna project managed the data integrity review of key regulatory reporting metrics for the Liquidity and Capital team at an Investment Bank. This project involved mapping data from data warehouses to front end data capture systems, identifying the controls and s to data integrity.
- Krishna developed a Master Data governance model for the procurement function of a large Energy and Natural Resources client. This project involved analysing and documenting an appropriate data governance structure, assigning roles, setting up KPIs and developing processes to govern procurement master data
- Krishna project managed the delivery of a Management Information pack solution for a State Government Aged Care Department. This solution collated key financial and non-financial results across multiple data sources (including spreadsheets and Oracle database extracts) into a standardised enterprise reporting output which was presented to the State Government on a monthly basis. In delivering this solution, Krishna gathered requirements around the key KPIs to be reported, mapped developed and implemented processes to standardise metrics used across various Programs and redesigned data collection procedures to improve the accuracy, completeness and validity of reports.



James Fysh

Architecture Specialist

Manager

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Function and Specialisation

- Software Engineering
- Data Engineering

Education, Licences & Certifications

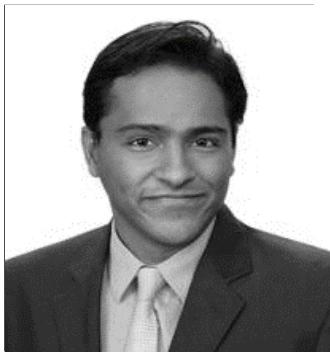
- Bachelor of Software Development,
 Deakin University

Overview

- James Fysh is a Manager in the Data & Analytics Team. He is experienced in delivering quality-engineered software within fast paced, agile environments and leveraging his technical and subject-matter expertise to quickly perform ad-hoc analysis and problem-solving. He has worked on many projects in the areas of Live broadcast and video encoding, Digital asset management, Geospatial Analysis, Digital design validation and exchange, and Data Analysis & Visualization primarily in the Broadcast and Telecommunication sectors. He is very experienced in all stages of the software development lifecycle including Analysis, Design, Build, Test, Deployment and Maintenance and has many years of experience building and delivering quality software.

Relevant Experience

- Lead developer on a project with a major telecommunications provider to remediate billing issues, as identified by fellow KPMG Data Analysts, driving the design and subsequent implementation of the back-end system responsible for case-management, remediation and reporting. Utilised Oracle SQL and particularly SQL triggers, as well as Python and pandas to deliver a high-performance back-end quickly and with minimal deployment issues.
- Lead developer on a number of projects to implement and improve the ingestion, validation and exchange of digital network-design documents between the client, infrastructure-owner and numerous delivery-partners. Network-design documents capture geospatial, relational and primitive attributes of network-elements and supporting physical infrastructure. These projects were largely realized via Python, numerous mathematical, scientific, graph and geospatial python packages and the postgresql database.
- Involved in the development of software that consumed, transformed and aggregated data sourced from disparate legacy IT systems, thus enabling users to explore the data in a single, unified view. This also enabled data-quality measures to be applied over the data in a very efficient manner.
- Lead developer building a data-analysis and corrective tool to repair/replace fabricated network-element records, including determining network-connectivity via graph analysis and circuit-level design details for a large company building a national broadband network.



Praveen Thirukonda

Integration and Storage Lead

Associate Director

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Function and Specialisation

- Microsoft Azure – Architecture, Data Integration
- Microsoft SQL Server Database
- Microsoft Power BI
- Big Data Analysis
- Machine Learning & AI
- Database Management
- Web Development and Design

Education, Licences & Certifications

- Masters in Computer Science, New York University
- Bachelors in Computer Engineering, University Of Mumbai

Overview

- Praveen Thirukonda is the Lead Data Engineer and an Associate Director in the KPMG Data & Analytics Team. He is experienced in working in an agile, fast paced environment to deliver successful results. He is experienced in leveraging emerging technologies to solve complicated business problems with Advanced Analytics techniques. He has worked on many projects in the areas of Customer Analytics, PII Identification, Text Analytics, Document Processing, and Data Visualization across Financial Services, Telco, Government Energy sectors. He has been involved with all phases of the Data Analytics lifecycle ranging from Data Wrangling, Analysis, Design, Architecture, Development, Debugging and Testing.

Relevant Experience

- Led the project to develop a powerful analytics solution, KPMG Footprint360, which comprised of models to help a major Australian Retailer get a better understanding of their business by using advanced geospatial analytics and customer segmentation as well as a model to help them determine the location of their next physical store to optimize revenue. This powerful solution was developed on Microsoft's Azure cloud computing platform.
- Implemented an advanced analytics solution for a Utilities Company to help them understand their customer population and their behavior. Made use of cutting edge Big Data technologies including Hadoop/Hive, SciPy/Pandas (Python) to process hundreds of GBs of data and applied advanced statistical techniques. Created Tableau visualizations to build an intuitive dashboard and Amazon Redshift to crunch millions of customer records.
- Led the architecture stream to design a Global Platform for BI Reporting and Data Lake capability on MS Azure for a huge multi national healthcare company. The goal of this platform is to enable the servicing of analytics needs across all the organization's various functional business units and geographical divisions.
- Led the technical development of numerous AI driven solutions in the chatbot and cognitive agents space leveraging voice driven computing technologies to reimagine business processes like mortgage application completion, banker customer interaction model in the Financial Services sector.



Gaurav Sharma

Integration and ETL Specialist

Senior Consultant

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Function and Specialisation

- Data Engineering
- Data Integration and Transformation
- Data Warehousing
- Database Management
- Master Data Management
- Informatica: Data Integration, Data Quality, Master Data Management

Education, Licences & Certifications

- Bachelor of Technology (Honors) - (Computer Science)
- Informatica Certified Developer

Overview

An accomplished BI Professional with demonstrated success designing and implementing BI and ETL solutions that improve business functionality using creative problem solving abilities and techno functional knowledge .

BI Tools : Informatica, Tableau Desktop, SSRS, SSIS, Talend ,Azure data factory

Database : SQL Server, DB2, MySQL, AWS Aurora, Oracle, Azure Sql Database

Relevant Experience

• **Ambulance Victoria, Melbourne** I have worked on design and development of Informatica mappings for operational reporting needs and have been involved as lead ETL developer in Data Quality remediation project for AV .I have seen and worked closely with AVs main data sets and teams during my 9 month tenure .I am well versed with ETL ecosystem of current Enterprise Data warehouse in AV and have good experience in data platform technology for proposed future state at AV

• **Swisse, Melbourne** : I have worked on analysing BI platform requirements for Swisse and designed data model to support the ETL implementation on Azure SQL Database .I was involved in stakeholder interview to get the requirement and map them to conceptual and logical schema .Did initial PI-SQL development, unit testing and documentation to implement Data Warehouse

• **Assa Abloy, Stockholm** I have been Involved in designing and development of Sales Data Warehouse to support Sales Dashboards and self-service reporting using Informatica as an ETL tool and Tableau as Visualization tool.

• **Administration of Children Services ,New York** I have been involved in data migration from old legacy systems to newly revamped reporting system in Oracle BI using SSIS / Informatica 9.6.



Raghavendar Pawar

Database Administrator

Manager

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Function and Specialisation

- Database Management

Education, Licences & Certifications

- Diploma in Computer Science
- MBA in IT

Overview

- Raghavendar brings in over 12 years of industry experience and has worked on full cycle implementations and upgrade from 11i to R12.2.5 and DB upgrades to 12c. Commissioning of PaaS services like Database on cloud service (DBCS), SOA, MFT & ICS. administration of PaaS services, SFTP setup and WebLogic administration, creating schemas on PDB, importing certificates, setting up call back services and working on integration objects deployment on SOA and ICS.

Relevant Experience

- **Currently working on AVIS project as Paas Administrator:**
 - Commissioning of PaaS services like DBCS, SOA, MFT & ICS.
 - Ensuring regular backups are happening and troubleshooting any backup failures, Troubleshooting includes applying patches on DBCS and resetting backup retention and purging archive logs.
 - Complete WebLogic Administration like creation DB and SFTP JNDI, importing security certificates, setting up call back services and Troubleshooting performance issues.
 - Setup Sftp on MFT and configuring ICS connectivity agents
- **Worked on IRWD Project as Oracle Apps and Database Administrator-Responsibilities listed below.**
 - Upgrade database from 11g to 12c, troubleshooting user issue and applying patches to database, RAC conversion and cloning databases.
 - Upgrade Application from R12.1.3 to R12.2.5, enable online patching, setup workflow services, troubleshooting and cloning application services.
 - Setup SSL, Workflow Mailer, custom top, setting up additional node and PCP setup.
- **Worked on NYCSCA as Oracle Apps and Database Administrator-Responsibilities listed below.**
 - Upgrade database from 10g to 12c, OATM conversion, troubleshooting user issue and applying patches to database.
 - Upgrade Application from 11i to R12.2.4, enable online patching, Customtop setup and cloning instance.
 - Build a standalone 11g Discoverer on a 12c Database.



Abigail-Joy Low

Data Science Lead

Manager

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Function and Specialisation

- Data Science
- Machine Learning and AI
- Statistical Analysis
- Predictive Analytics
- Data Visualisation
- Microsoft Azure

Education, Licences & Certifications

- First Class Honours in Economics & Econometrics, University of Melbourne

Overview

- Abigail-Joy Low is a Data Scientist Manager at KPMG Lighthouse. Abigail has designed and implemented bespoke data science products on the Microsoft Azure Cloud Platform. She has experience in the full end-to-end solution architecture of advanced analytics products, including data sourcing strategy, storage, advanced analytics and visualisation. The tools she has built have driven strategy & operations in investment funds, pharmaceuticals and non-for-profit. Prior to KPMG, Abigail worked as an Economist in the Singapore Government, where she applied econometrics & machine learning to inform public policy & economic research.

Relevant Experience

- **Advanced Analytics Sprints for a large Victorian Healthcare Provider:** Delivered advanced analytics sprints that built proof of concepts for a large Victorian Healthcare Provider. The sprints involved gathering stakeholder and user requirements, translating them to advanced analytics solutions considering end state architecture and operationalization. One solution involved producing a working dashboard that forecasts the hospital/ambulance interface to optimise hospital diversion decisions.
- **Market Intelligence System for a Global Property Investment Fund:** Developed a comprehensive solution that consolidates global economic, property and demographic data to identify high potential cities for investment. The solution provides a dashboard that allows dynamic comparison of geographies and markets by economic turning point analysis, key property performance indicators and structural factors. This solution was deployed on Microsoft Azure, featuring automated data ingestion, storage, analytics and visualisation. It is scalable to include additional data for new sectors (e.g., Retail and Industrial), new geographies and new forms of data analysis including unstructured data analytics.
- **Pulse of the Economy – High Frequency Economic Monitoring Dashboard:** Designed and created an economic monitoring dashboard to provide timelier, more granular sensing of the Singapore economy to the whole of Government. Developed high frequency economic indicators from unconventional sources of data, including web scraping online job portals to monitor job vacancies and employment. Validated time series forecasting properties of the indicators for statistical robustness. Visualised in R Shiny to provide regular economic updates to senior management and support timely recessionary policy.



Els Godecharle

Data Scientist

Senior Consultant

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Function and Specialisation

- Data Science
- Machine Learning and AI

Education, Licences & Certifications

- PhD in Actuarial Science
- Master of Financial and Actuarial Engineering
- Master of Insurance Studies
- Master of Mathematics
- Bachelor of Mathematics

Overview

- Els is an experienced data science consultant in the KPMG Analytics team. She joined after completing her PhD in Actuarial Science researching the use of predictive analytics in the health and general insurance industry.

Relevant Experience

- Analytics Uplift Program (Ambulance Victoria) – Els worked with AV as part of two Advanced Analytics sprints. The sprints delivered insights through data science in an agile delivery method. Techniques used across the sprints included time series modelling and clustering. The sprints also had an AV capability uplift component.
- Credits & Rebates analysis: Analysis of a big data set to identify patterns in customer journeys ending in a credit. The machine learning technique used was a sequential association analysis. Results helped identify opportunities of improvement in customer experience and reducing credits.
- Digital Adoption Modelling: Development of an ensemble model to predict the likelihood of a customer being a digital adopter based on this customer's characteristics. Model features included demographics, geographic information, product holding and payment method.
- Natural Language Processing – Complaints: Extract underlying themes and topics from a large complaints data set through unsupervised natural language processing techniques. Results of the analysis informed remediation strategies and increased complaint processing efficiency.



Mary-Ellen Costello

Data Scientist and Health SME

Senior Consultant

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Function and Specialisation

- Data Science

Education, Licences & Certifications

- Post Doctoral Research Fellowship
- PhD in Medicine (Genetics, Metagenomics and Statistics)

Overview

Mary-Ellen is a Senior Consultant in Innovation & Digital Solutions with strong expertise in quantitative analysis, problem solving and advanced analytics. She joined KPMG after completing her PhD (Medicine) and Postdoctoral studies (NHMRC Research Fellow – University of Queensland) at the Princess Alexandra Hospital in Brisbane. Mary-Ellen also has 10yrs experience in high volume private pathology as a scientist and brings her clinical experience in the private and public health sector to the team. She offers strong skills in stakeholder engagement, research and analysis, project management and reporting.

Relevant Experience

- **Victorian Department of Health and Human Services (DHHS):** Mary-Ellen lead and delivered the Data Science workstream within the KPMG team that developed the Child Protection Decision Support Tool. The Data Science component of the project had two aspects– an evaluation of the existing and partially developed prediction tool followed by an uplift and enhancement of the prediction tool based on the evaluation recommendations. The work undertaken delivered a decision support tool that uses statistical analysis to identify and weigh the factors that predict a child's of harm, and supports intake practitioners with better decision making based on access and analysis of a broader range of DHHS datasets.
- **Telstra Health:** Mary-Ellen supported the Telstra Health team with the automation and delivery of the National Cancer Screening Register for Cervical Cancer. This included the design, automation and implementation of the process that issued correspondence for the Cervical Cancer Program including invitations and reminders to screen.
- **Member Data Management, Royal Auto Club of Victoria (RACV):** Mary-Ellen was part of the team that undertook an internal audit of Member Data management and Quality of RACV. The internal audit considered RACV's governance structure in relation to data management and data quality as they relate to critical membership data assets. Including the design and effectiveness of processes, systems and controls in place to maintain compliance with regulatory requirements and legal obligations and support data management and quality.
- **Victorian Department of Education and Training – Secondment to the Performance and Evaluation Division (PED):** Mary-Ellen was seconded to PED for to assisted with their proposal for a 5 year consolidated survey and data collection strategy. This involved extensive stakeholder engagement, proposal material development and report writing. Mary-Ellen worked closely with many members of PED to develop the messaging and presentation material for the proposal. The consolidated survey and data collection strategy would secure funding for survey activities over the next 5yrs, as well as providing the necessary capabilities for PED to meet the increasing information needs of Schools and the Department.



Chantal Suder

Visualisation, Reporting and UI / UX Lead

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Function and Specialisation

- Management Reporting and Dashboards
- Data Visualisation
- High-Res Custom Visualisations
- Web Development and Design

Education, Licences & Certifications

- BSc. Computer Science (McGill)
- MSc, Management of Information Systems (Trinity College Dublin)

Overview

- Chantal is a Manager in the Data Engineering team and has experience in design and full-stack development of data analysis solutions, with a focus on data visualisation and artificial intelligence. Chantal has strong experience applying this skillset to a wide range of industries, including financial services, telecommunications and government.

Relevant Experience

- **Infrastructure Framework Web Application:** developed an interactive web application to showcase a comparative infrastructure framework (built using Flask, JS, D3 on an Azure VM)
- **Dashboard Development and Data Visualisation:** built a suite of dashboards for a government department which enabled effective display of analytics and reporting of government data to a larger audience (built using Tableau, SQLServer), created a set of data visualisation guidelines to be used across the larger team for further dashboard development
- **Decision Support Tool:** built a decision support tool for a government department to surface service usage and predictive data to workers and inform decision making (built using Power BI, SQLServer, Azure stack)
- **Chatbot Development:** developed applications for use on Amazon Alexa digital assistants, developed a Lex chatbot for financial services (using Amazon Alexa Framework, Amazon Lex, Amazon Polly on AWS)
- **Transition risk management:** Designed and developed a transition risk management dashboard which enables the visualisation and tracking of function and system dependencies and migration tasks. This enables users to easily visualise current state, track additional information and monitor future state and risks for better transition management (Neo4j, Django, Python, D3)
- **Analytics infrastructure management and administration:** server procurement, server administration and configuration for the advanced analytics team of a leading Irish telecommunications company (hosting for an analytics web tools platform and internal analyst use)



Sumaya Baitalmal

UI / UX Designer

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Function and Specialisation

- Interactive Multimedia and Design
- Management Reporting and Dashboards
- Data Visualisation
- High-Res Custom Visualisations
- Web Development and Design

Education, Licences & Certifications

- Master of Information Technology – Monash University
- Bachelor of Information Technology (Interactive Multimedia and Design – Carleton University)
- Diploma of Creative Arts – Algonquin College

Overview

Sumaya's background is rooted in interaction design and multimedia, with 3 years' experience designing innovative user interfaces and visualisation.

She is passionate about providing meaningful insights and enhanced user experiences.

Relevant Experience

- Worked together with a client's team to create tooling around case management and tracking remediation progresses. Engagement involved gathering user interface requirements, contribute to building the data model, create wire frames, user experience and interface design, prototyping, developing and testing activities.
- Previous engagements in building data-driven web applications, software architecture, testing and research, implementing web application tools that serve proactive service assurance (with geo-location capabilities) for businesses. Some of my activity was geared towards creating demos, prototypes and showcasing tools, with an awareness of the end-to-end processes and engaging in developing at different levels of the stack.
- Previous experience in software and mobile applications design and development, user experience and user interface design, two dimensional and three dimensional graphics, visual effects and multimedia production.



Sakshi Grover

Reporting Specialist

Senior Consultant

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Function and Specialisation

- Data and Analytics Strategy
- Business Requirements Elicitation
- Management Reporting and Dashboards
- Data Visualisation
- High-res, Custom Visualisations

Education, Licences & Certifications

- Bachelor of Technology, Computer Science
- OBIEE Certified

Overview

- Sakshi is a Senior Consultant in KPMG's Data & Analytics, Lighthouse practice has demonstrated success designing and implementing BI and analytical solutions that improve business functionality. She has extensive experience of around 10 years working on BIDW implementations through variety of platforms and tools like OBIEE, SAP Business Objects, Alteryx, Tableau Analytics and which involves end to end experience in Architecture, Administration, Development, Integration and Customization. She's worked with clients across various industries like Telecommunications, Healthcare, Food & beverages.

Relevant Experience

- Understanding AV's strategic business objectives and requirements for analytics. Assessment to provide a thorough business understanding of the current state of AV's analytics capability. Define future state, identify gaps between current and proposed future state. Enable insightful reporting platform for Operations department.
- Possess exceptional SQL, Data Analysis, problem-solving skills and proven ability to analyze complex technical issues and formulate fast effective solutions whilst identifying root cause.
- Highly result oriented, committed and exceptional people skills. Proven quick learner and can learn and adapt to new technologies and environments in an optimal timeframe.
- Providing recommendations on data visualization best practices and project implementation, maintenance of business intelligence applications, impact analysis, and documentation
- Has in depth understanding of BIDW concepts and ETL processes
- Appealing and award-winning Data Visualization skills, handling large data volumes and performance tuning on executive dashboards and reports that help driving business decisions.
- Managing and mentoring a team of Reporting developers and testers.
- Actively involved during estimations, forecasting, resourcing and staffing.



Stephen Baxter

QA and Testing Lead

Associate Director

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Function and Specialisation

- Software Testing
- Test Management
- Software Quality Assurance
- Agile Project Management
- Software Defect Triage and Management

Overview

Stephen is a Senior Test manager within KPMG's working within Advisory. Stephen has extensive experience managing testing across many sectors. Stephen has built a majority of his experience in the banking sector but recently has worked in projects at both AMP, NBN & Deakin University. Stephens has 20 years of testing experience in the banking industry focused on Global Markets trading platforms and downstream interfaces. He has detailed knowledge of the Capital Markets products and processes, and understands the tools and methodologies to facilitate best practice testing.

Relevant Experience

- **Test management** – He has both managed the testing resources and testing timelines along with reporting the testing results and metrics to the wider management team. Stephen has managed the testing processes for teams that have been both locally based & located overseas. Stephen has been able to co-ordinate these teams of people across different geographical regions and where required ran the testing from the distal location while reporting back to management in Australia. Stephen has worked in SG, HK, TW and India during his testing career
- **Australian Banks:** Test Manager across many Australia Banks for OTC Reform Projects along with major trading system implementations and upgrades. Hands on test execution across Derivatives, Interest Rates, FX, Commodities, Credit and Fixed Income businesses. Creating and verifying test packs to ensure coverage of all reportable trades, and all trade lifecycle events.
- **Workday Finance:** Test managed the successful implementation of Workday Finance at Deakin University.
 • Stephen has Workday Finance Certification.
- **AMP:** Test Managed the successful implementation of a replacement to the older AMP Company Tax management system.
- **Overall:** Developing a repeatable testing structure to ensured ease of testing and reduced costs for the client is a priority. Empowering and training the client that allow future testing requirements to be accomplished in-house. Assessing Defects and using a based approach to testing priorities.



Renuka Kumar

Testing Manager

KPMG Lighthouse Tech solutions

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Function and Specialisation

- Software Testing
- Software Quality Assurance
- Software Defect Management

Education, Licences & Certifications

- Bachelor of Computer Science Engineering, Anna University, Chennai
- ISTQB Certification
- Microsoft Certification in Web Application Developer Dot Net
- Sun Certification in Web component development in Java

Overview

- I'm a QA Analyst at KPMG, focusing on UAT, SIT, PVT testing of the products.
- In my QA and Test Analyst roles I have focused mainly on the creation of test plans and test scripts. I have also been involved in CI/CD and the testing that follows each deployment, to the respective environments (Test, UAT, Demo, Prod).
- I have also been part of process creation for testing activities in the multi - tenancy applications and cross browser testing.

Relevant Experience

- Renuka leads the QA team at KPMG Lighthouse Tech Solutions, Digital Services - which is an emerging set of digital applications that uses the Azure cloud as its deployment and storage platform.
- My focus as a tester in an Agile project is:
 - To understand the values and principles that underpin Agile projects, and how testers are an integral part of a whole-team approach together with developers and business representatives.
 - Not just focus on testing the product to find bugs, rather focus largely on improving the processes to prevent defects, and testers play an important role in this.
 - To contribute in the following activities:
 - Planning the testing for the release
 - Participating in the detailed analysis of user stories
 - Creating acceptance tests for the user stories
 - Defining the necessary test levels
 - Breaking down user stories into test cases
 - Prepare defect reports against the traceability matrix
 - Identifying functional and non-functional aspects of the system to be tested
- Having worked for different projects including Department of Environment Land, Water and planning and one of the Big Four, Renuka brings in some solid experience and capabilities in Quality Assurance processes and testing.



Neerajha Ram

Testing Specialist

Consultant

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Function and Specialisation

- Data and Analytics Strategy
- Business Requirements Elicitation
- Master Data Management
- Data Governance
- Software Testing
- Agile Project Management

Education, Licences & Certifications

- Master of Science (Distinction) – Biomedical Engineering (Imperial College London)
- Bachelor of Engineering (Hons) – Biomedical Engineering (National University of Singapore)

Overview

- Neerajha is a highly capable consultant with excellent academic qualifications in biomedical engineering, and consulting experience in implementing end-to-end digital transformation project solutions. She possesses a strong skillset in engineering, documenting business user requirements, conducting solutions testing and exemplary presentation and communication skills.

Relevant Experience

- **Leading university, Melbourne:** Neerajha identified the gaps in their Information Management Strategy, particularly in data governance, data quality, data management and in the establishment of an Information Governance Board and Information Stewards Group, with the ultimate aim of providing recommendations to improve their business model and optimise data strategy.
- **Leading chemical manufacturing company, Singapore:** Neerajha helped implement a custom end-to-end predictive analytics digital solution for the improvement and optimisation of business processes. Neerajha created and coordinated complete analytical testing (SIT and UAT in JIRA using SQL) for this solution, and created and delivered training to over 50 client employees to help in change management. She also designed the front-end user interface for this digital solution (Invision & Zeplin), while fine-tuning the process engineering and data science analytics in the implementation of this digital solution.
- **Healthcare start-up, Singapore:** Administered and organised business project execution for a healthcare start-up by developing their business portfolio and strategy. She spearheaded the growth of the start-up to revenue stage via digital and social marketing and client acquisition.
- **Imperial College London:** Neerajha invented a novel tourniquet and tourniquet testing methods as part of her Master's thesis in London, in collaboration with the Centre of Blast Injury Studies and St. Mary's Hospital Trauma Centre, for which a patent is pending.
- **Key achievements include:**
 - Published a research paper in the Journal of Medical Devices, April 2014
 - Scientific Poster Presentation at Design of Medical Devices International Conference
 - Presented research project at IEEE Medical Robotics International Conference 2013
 - Presented and won at APAC Assistive, Rehabilitative and Therapeutic Technologies Conference 2015
 - Most Elegant Design Instrumentation Award 2013 – Department of Bioengineering, NUS
 - GCE 'A' Level Academic Excellence Award, GCE 'O' Level Academic Excellence Gold with Honours Award
 - Singapore Indian Development Association (SINDA) Academic Excellence Award



Priyank Baveja

Security Lead

Director

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Function and Specialisation

- Cyber Security and Cyber Resilience
- Security Architecture
- Technical Security Assessments

Education, Licences & Certifications

- Masters in Computer Applications
- Bachelor of Sciences
- Systems Security Certified Practitioner
- RSA Certified Archer Administrator
- Six Sigma Green Belt
- TOGAF Certified Practitioner
- Prince2 Certified Practitioner

Overview

- Priyank is a Director and the National Leader for Cyber Defense practice for KPMG in Australia. He has over 14 years of experience in IT and security advisory services and has worked across markets in the US, India and Australia.
- Priyank has extensive experience in assisting organisations identify and assess cyber security be it in their IT systems, facilities, processes or due to its people. Priyank has led several large programs involving security assessments of diverse set of technology platforms ranging from the latest in ICT networks and infrastructure to traditional IT systems.
- Priyank's experience covers a diverse range of cyber security areas including security strategy, security architecture, technical security threat, and vulnerability assessments, social engineering, web and legacy application testing, mobile application testing and testing embedded platforms. His technical experience is complemented by his broader understanding of cybersecurity disciplines including security governance, and compliance.

Relevant Experience

- Priyank has led cyber security internal audits at Ambulance Victoria and several other health care sector organisations in the recent past. Priyank has led audits involving security penetration testing of IT systems as well as holistic cyber maturity assessments against recognised standards such as NIST and ISO 27001. Priyank provided subject matter input, facilitated the assessment of business due to the technical vulnerabilities and provided overall quality review and leadership to these audits.
- Priyank recently assisted the Department of Education, Government of Queensland in designing security architecture for key cyber security capabilities including security monitoring, next generation firewalls, remote access and network zoning. The key principle of the architectures supported the Department's schools of the future program and key objectives around student safety, responsiveness to incidents and threats and enabling open learning environment through transparent security. Priyank provided overall leadership and subject matter content in defining the architecture for these capabilities and a roadmap for the Department to achieve maturity and provide ongoing optimisation of these capabilities.



Saahil Chopra

Security Specialist

Manager

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Function and Specialisation

- Enterprise Security Architecture
- Network Penetration Testing
- Mobile Application Security Assessments
- Database Auditing
- Configuration Reviews
- Architecture Analysis
- Information Security Governance
- Risk Management & Compliance

Education, Licences & Certifications

- Bachelor of Technology (Computer Science and Engineering)

Overview

- I am experienced in security design and architecture, performing assessments of varied IT systems ranging from IT infrastructure to applications. I specialize in Enterprise Security Architecture, Network Penetration Testing, Mobile Application Security Assessments, Database Auditing, Configuration Reviews and Architecture Analysis. I also have considerable experience in Information Security Governance, Risk Management & Compliance..

Relevant Experience

- **Enterprise architecture assessment** for a leading global telecommunications company in Africa, enabling it to align its information and technology assets, sourcing and IT strategy with current and future needs. The assessment includes a technical and functional health assessment for applications deployed across 15 countries in Africa. The applications are benchmarked against the TM Forum Frameworx models for capability assessment to provide management a visibility of the OSS and BSS landscape.
- **Onsite and remote security assessment** including penetration testing, application testing, web application security assessment, onsite internet security assessment, social engineering, wireless assessment, configuration review, network architecture review and IDS/IPS hardware deployment for a variety of solutions for several multinational clients operating across a spectrum of industries, such as telecommunications, manufacturing, banking, business process outsourcing and financial services.
- **Performing ethical hacks** to assess the vulnerabilities of Internet, and/or Intranet connected systems, networks, and applications including Windows, Linux, AIX, Solaris, HP-UX, VXWorks, Cisco IOS/CatOS and ICS/SCADA based systems.
- Reviewed the **security design and implementation** of Public Key Infrastructure for a large Australian bank to assess capabilities to integrate with future systems and applications. The review included assessing server and domain isolation and organization-wide secure communication using PKI and IPsec policies.
- **Payment Systems Attestation** as part of the internal team for one of the largest banks in the United Kingdom. The scope of the attestation included but was not limited to the BACS, SEPA, Faster Payments System, VISA, MasterCard and the LINK scheme certifications. Key requirement was to assess the bank's implementation of the scheme requirements and advise management on any changes to the application design, infrastructure implementation or business process governance to successfully meet the scheme certification criteria



Sarah Dobson

Change and Communications Lead

Associate Director

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Function and Specialisation

- Tech enabled change
- Learning & Development

Education, Licences & Certifications

• Business Bachelor of Administration (BBA)
1st class Hons

• Workday HCM & EM Certified

Overview

- Not only experienced in delivering change, Sarah is used to working with data. Through her roles on several HR technology implementations, she has worked with teams to define the metrics that matter for both the workforce as well as the function itself.

Relevant Experience

• **Local TAFE** - Engagement Manager, leading the creation of a change management framework to be implemented within the Institute. The work also included delivery of a 2 day Change Practitioner course and supporting operating model recommendation.

• **Global Financial Company** – Organisation and Change Workstream Lead for Workday implementation. This included creation and deployment of the change and training management strategy.

• **Global Retailer** - Training and Change Consultant for Workday implementation which included the facilitation of a global process design workshop for over 90+ people. The focus of these workshops was to ensure the solution was designed to address current state pain points and deliver value to the customer.

• **Multi-national Business Services Outsourcer** - Project manager of the rollout of a company wide HR performance management system, which also included leading change; defining the approach, engaging stakeholders across the business as well as developing and delivering training and communications

• **National Highways Organization** - Project Manager to the setup of a centralised Advisory Centre, with a focus on establishing common ways of working and implementing supporting IT infrastructure

• **Global Financial Services** – Functional Lead to a global bank implementing Workday HCM. Following global design, responsibilities included ongoing liaison with the HR Senior Leadership Team to ensure requirements captured were fit for purpose as well as co-ordinating and managing the delivery team to configure.

• **Global Pharmaceutical** – Process and Change Consultant on a HR Transformation project which included implementation of Workday. This included leading on process design approach, developing the blueprint change management methodology and support to overall deployment strategy



Chloe Symes

Change and Communications Specialist

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Function and Specialisation

- Culture and Change Management
- Learning & Development

Education, Licences & Certifications

- Currently completing a Masters of Applied Positive Psychology, University of Melbourne, 2018 - 2019
- Bachelor of Business, Monash University (2011)
- Accredited Mental Health First Aid Officer with Mental Health First Aid International. Valid until August 2021
- Member of the Australian Human Resources Institute (2012 – present)

Overview

- Chloe possesses extensive culture change, change management, learning and development and stakeholder engagement experience. Further, through her previous Human Resources (HR) Manager role at KPMG, Chloe developed deep expertise in performance, culture and talent management, employee relations, employee engagement, and HR analytics.

Relevant Experience

- **Ambulance Victoria, Analytics Uplift and Data Governance Program** – Chloe is providing Change Management guidance to AV to help their leaders and paramedics understand the data and have meaningful conversations around ways of working to improve patient service delivery.
- **Victoria Police, Forensic Mental Health Training Project** – Victoria Police has engaged KPMG to conduct current state analysis into their forensic mental health training packages as well as understanding what training gaps may exist for operational members against the organisation's strategic direction and jurisdictional best practice. Chloe is utilising her learning and development insights to conduct the training gap analysis, as well as working with Victoria Police to define mental health knowledge, skills and competencies for their operational workforce. The project will also develop a Pilot training package and evaluate the outcomes obtained from this package to inform the future direction of the Forensic Mental Health Training Program.
- **Department of Health and Human Services, Child Protection Decision Support Tool** – Chloe partnered with the Department to analyse training needs and to develop a training package as part of the Child Protection Decision Support Tool Project. Chloe's role ensured the package delivered was aligned to current practice guidance and supported Intake Practitioners and Team Managers to practically apply the Tool to their roles.
- **Family Safety Victoria (FSV), Family Violence Assessment** – Chloe worked as part of a consortium to redevelop the Common Assessment Framework as part of the Royal Commission recommendations into Family Violence. Chloe's role is focused on developing guidance materials to embed the redeveloped Framework into a variety of prescribed and universal services across Victoria. She is also developed a Training Strategy focused on sustained workforce development and training as part of the FSV Industry Plan and developing interim training in the online tool offered as part of the redeveloped Framework for specialist practitioners.

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